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ABSTRACT

Three studies were conducted to examine whether printed cues conveying information about spoken intonation patterns would aid beginning readers in synthesizing printed words into spoken sentences. To represent intonation patterns, words were printed in three sizes corresponding to stress-pitch levels, and spacing between phrase boundaries was extended to reflect pause points. Reading intoned text was contrasted with reading standard print and with print where word sizes and spaces were varied randomly. Story reading, cloze, sentence recall, and rereading tasks yielded multiple measures of reading behavior in samples of second graders, third graders, and below-grade-level fourth graders. Results indicated that children trained to read intoned print did not outperform the standard print or random print groups, suggesting that printed intonation cues are useless to beginning readers. (Author/AA)

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LINNEA C. EHRI
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Abstract

The purpose of the study was to examine whether printed cues conveying information about spoken intonation patterns might aid beginning readers in the process of synthesizing printed words into spoken sentences. Three experiments were conducted. To represent intonation patterns, words were printed in three sizes corresponding to stress-pitch levels, and spacing between phrase boundaries was extended to reflect pause points. Reading with intoned text was contrasted to reading with standard print having uniform word size and spacing, and to random print where word sizes and spaces were varied unsystematically. Several tasks--story reading, cloze, sentence reading/recall, rereading--yielded multiple measures of reading behavior on second, third, and below-grade-level fourth grade readers. However, children trained to read intoned print did not outperform standard print or random print groups. These results suggest that printed intonation cues are useless to beginning readers. This may be because, as Goodman suggests, syntactic patterns and expectations are formed in the head before many words are reached with the eyes. Hence, printed word size and spacing cues may come too late to help readers create expectations about how words are to be organized into sentences.

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Introduction

A problem capturing the interest of psychologists as well as teachers is the problem of learning to read. Clearly not all children are able to profit from the instruction provided in schools, and consequently teachers are hungry for new methods and materials which hold greater promise of improving their students' reading skills and their own records of teaching success. Researchers too are concerned about the incidence of reading failure in schools. In addition, they are curious about and anxious to explain how it is that people are able to read, how mature readers can process text so rapidly, how children acquire this skills, and why some children appear to find the learning process so easy and automatic while others experience much difficulty and frustration. The present report describes a series of studies of beginning reading intended to carry implications for psychological theories of reading as well as for classroom practice.

Analysis of the process of learning to read printed English from a psycholinguistic perspective reveals some important linguistic-structural skills to be mastered by beginning readers. They must become conscious of the constituents of meaningful speech which are specified as discrete by the conventions of printed language (i.e., words). They must learn how printed language corresponds to and reflects the structure of spoken language. And, once they have achieved some proficiency in analyzing and matching units of speech and print, then they must learn how to synthesize these units into grammatical phrases and sentences so as to derive meanings. It is the latter capability which is the focus of the set of studies conducted here.

It is clear that even though children are able to identify the spoken correlates of printed forms, they still may not be able to derive meaning from a line of print. Oaken, Wiener & Cramer (1971) present evidence that the process of integrating words into larger phrases and sentences does not happen automatically in children possessing reading knowledge of individual words. They observed poor fifth grade readers who, though able to identify all the words contained in a passage, were not able to integrate the words to make sense of the text. If the process of synthesizing words into sentences were simply a matter of adding up the meanings of the separate lexical units, then few would find reading difficult. However, it is not. Rather synthesis involves the imposition of grammatical structures and relations upon the separate units.

Goodman (1968, 1970) in his psycholinguistic model identifies two ways that successful readers achieve synthesis in their reading. In order to make sense of the print they are viewing, beginning readers transform graphic stimuli into oral language forms. The important feature serving to integrate units in oral language is intonation consisting of variations in stress, pitch and pause (Lieberman, 1967). Thus, in order for beginning readers to create meaningful speech out of print, they must impose appropriate intonation patterns on the units they are reading. However, this is not the case for more proficient readers. Rather as a consequence of extensive reading experience, they have acquired functional knowledge of the structural regularities of printed language and this has replaced dependence upon intonation patterns for synthesizing words into sequences.

By utilizing syntactic visual cues (i.e., punctuation marks, capital letters, word length, sight recognition of function words, morphological endings) to organize their reading, such readers are able to decode meaning directly from print.

Synthesis which depends upon knowledge and use of syntactic structure and print regularities has received some attention from researchers. Agreeing with Goodman, Hochberg (1970) describes mature reading as a process in which peripheral search guides (i.e., printed cues registered in the periphery of the eyes) are used to obtain advance information about the structure of a text. Detection and use of the blanks between words, the first letters and lengths of words, the location of capital letters, and punctuation marks all serve to maintain a good reader's speed, organization, and comprehension of a passage. The few investigations undertaken to assess the effects of altering the form of such printed cues upon reading behavior have yielded interesting results.

Hochberg, Levin and Frail (described in Hochberg, 1970) presented children with texts in which the spaces between words were filled with a consistent but meaningless symbol. Reading speeds on this text were substantially below those with unadulterated text, especially among older Ss (fifth graders) who were presumably more dependent upon word spacing cues to guide their reading.

Cromer (1970) studied the effects of grouping printed words within sentences into constituent phrases. He did this by extending the amount of blank space at phrase boundaries. In presenting this text as well as regular text to adults thought to be deficient in reading organizational skills, he found that comprehension with the phrase structured text was superior to comprehension with the unaltered text. This effect was thought to result from the advantage provided by text cues which assisted these readers in grouping words into meaningful units.

These studies suggest that print cues can either facilitate or impede aspects of the reading process depending upon whether the cues aid or hinder the reader in structuring a text. Other findings reported in these studies suggest that cues will alter reading behavior only when the cues are relevant to the particular structural devices used by the reader. In Hochberg's study, elimination of blank spaces in text exerted little effect upon second graders who were presumably too inexperienced with print to utilize structural information such as word length in their reading. In Cromer's study, good adult readers failed to benefit from phrase structure cues presumably because they had available other means of identifying these constituents. Thus, there are empirical as well as theoretical grounds for expecting that printed cues may affect reading and that effects will vary depending upon the relationship between the information conveyed by the cues and the information needed by the reader.

A number of studies combine to indicate that proficient readers possess functional knowledge of printed and spoken syntactic phrase boundaries and morphemes whereas poor and beginning readers do not. Mehler, Bever & Carey (1967) demonstrate that eye fixation points of mature readers are located at phrase boundaries. Work on the eye-voice

span (Levin & Kaplan, 1970; Levin & Turner, 1966) suggests that more proficient readers expand or contract the amount of information processed in one fixation to fit the phrase structure boundaries of sentences. Resnick (1970) has found in an eye-voice span task that the number of stops at phrase boundaries is substantially greater for college students than for third-fifth graders. Weinstein & Rabinovitch (1971) found that good fourth grade readers were able to learn sequences of nonsense syllables containing syntactic structural cues more rapidly than unstructured sequences. (These stimuli were presented orally.) In contrast, poor readers were unable to make use of the structural cues and so learned both types of sentences with equal difficulty. Since it appears that knowledge of syntactic structural cues in speech and print is correlated with successful reading, and since beginning readers appear to lack much awareness or use of syntax to organize their reading, the possibility that beginners utilize other sources, perhaps intonation patterns, for synthesizing words into sentences is a distinct possibility.

The role of intonation patterns in reading has received less attention than syntactic structures, although various researchers and reading authorities stress the importance of this aspect of language (Farnham-Diggory, 1972; Lefevre, 1964). For example, Fries (1963) points out:

"On the whole, contrary to the belief of many, written materials contain less of the language signals than does talk. In the graphic representations of language there are left out such language signals as intonation and stress and pause. These are important features of the signals of meanings, especially of social-cultural meanings. If one is to read with comprehension the graphic representations of the language signals, he must learn to supply those portions of the signals which are not in the graphic representations themselves. He must supply the significant stresses, pauses, and intonation sequences. A large part of learning to read is a process of learning to supply rapidly and automatically the portions of the oral signals that are not represented in the graphic signs." (p. 130)

Also, Goodman (1968) asserts:

"In the early reading stages, oral and silent reading are probably quite comparable as processes. The recoded graphic input must be supplemented, principally with the intonational aspects of speech. Sequences of phonemes or morphemes must be perceived as fitting together into sequences of phrases and syntactical patterns. Relative stresses must be assumed, junctures inserted, pitch modulated, so that when the recoding is complete it must sound like familiar language." (p. 18)

However, he further asserts:

"But eventually the process is telescoped further. At this point recoding (from print to oral language) and decoding (from oral language to meaning) become simultaneous so that, except in passages where the phrasing is complex or ambiguous, the reader is virtually decoding meaning directly from graphic input." (p. 18)

Both Goodman and Fries agree that the beginning reader must learn to impose characteristics of speech on printed text in order to derive meaning. However, Goodman believes that this is a temporary phase to be eliminated once the reader gains sufficient reading proficiency.

The role of spoken language in reading has been a matter hotly debated. McGuigan & Bailey (1969) found that covert oral behavior during silent reading (as measured by lip and chin electromyographic recordings) decreased in amplitude with age. However, they also report that such behavior was still evident at a significantly high level in the adult. Conrad (1972) in a review of the evidence concludes that silent reading is accompanied by some phonological imagery or activity regardless of age or reading proficiency. From these studies it appears that covert articulation or acoustic representation is commonly present when people read. However, these studies do not clarify whether such speech is essential to the reading process. It is possible that as readers gain proficiency, they lose their dependence upon speech but retain the habit of producing some covert oral responses.

Although there is uncertainty about the role of intonation in adult readers, several theorists agree that speech, particularly intonation, is centrally involved in beginning reading, as indicated above. However, evidence is not plentiful. Goodman as reported by Jones (1968) found that "children who read aloud with 'natural' intonation tended to retain more information from a story" than presumably children whose intonation was not natural.

In an attempt to gain some more direct evidence, Ehri & Wilce (1974) examined the effects of a text containing intonation cues upon reading behavior. Their text was designed to convey information about levels of stress-pitch which might be assigned to words in an oral reading of the text. This was done by varying the letter-size of the words, with the largest of three sizes assigned to words receiving the most stress or highest pitch and the smallest size to words given the least stress. A sample of this intoned text is displayed in Figure 1. In addition, texts

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Insert Figure 1 about here.

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containing two other word size treatments were created. In one case, the grammatical form class of words was used as the basis for assigning word size. It was reasoned that cues reflecting the form class of words might convey structural consistencies useful for organizing sentences into phrase units. In the second type of text, word sizes were assigned randomly. This condition was included in order to verify that any facilitative effects resulting from systematic word size variations could be attributed to these variations, not to the mere presence of word size differences. Reading performance with each of the three text treatments was compared to a control condition in which word size was uniform. The Ss selected to read these texts were third and fourth graders tested at the end of the school year. Since a substantial portion of the classroom learning experiences of fourth graders, in contrast to third graders, entails read-

ing, it was thought that by the end of the school year, these two groups should be quite different in their reading experience and hence their use of speech to derive meaning. For this reason, it was expected that third graders would profit more from the intoned text than fourth graders.

To assess effects of the cues on reading, members of foursomes matched on the basis of standardized reading scores were assigned randomly to one of the four text groups ($N = 80$). They were given practice in oral and silent reading of one story and then tested on a second passage which they read silently. Analyses of variance were performed on three dependent measures: reading time, number of correct facts recalled freely, and number of facts elicited by question prompts. Results revealed that, though fourth graders remembered more of the passage than third graders, their recall was not differentially affected by cue type. Neither was the recall of third graders. However, the reading speed of third graders given the intoned text was greater, in fact more than a minute less, than that of the control group given standard text ($\bar{X} = 179.7$ vs. 253.5, $p < .025$). The effectiveness of the cues on third grader speed was attributed to these Ss' dependency upon speech forms for deriving meaning. Three explanations were entertained to account for the absence of intonation effects at the fourth grade level. Fourth graders may possess sufficient experience and proficiency to decode meaning directly from print and so they have little use for speech intonation cues. Alternatively, since fourth graders are more experienced readers, their reading habits may be stronger and more difficult to alter than third graders. The third explanation rests upon the fact that the text was more difficult for third graders to read than for fourth graders. Edfeldt (1960) cites evidence that articulatory activity during reading becomes more pronounced when readers encounter difficult material. Fourth graders may not have invoked speech forms because the text was not hard for them to understand.

The present set of studies was designed to explore further the effects of intonation cues upon reading behavior. One weakness of the previous study was that no training in the use of the intoned text was provided. Ss were given only oral and silent practice reading with the cues. It may be that for Ss to modify existing reading habits and to learn to make full use of such cues, they need to receive explicit instruction and practice.

One other purpose of this research was to assess effects of a more complete intonation cue system. In Ehri's previous study, effects of only one aspect of intonation were investigated, stress-pitch levels. However, a system depicting speech patterns in print should include information about pauses as well as stress and pitch. One way of signaling pause points is to widen the spaces between words where pauses occur. There exist reasons for expecting that such information will prove useful to readers. First, pauses are useful for disambiguating sentences, as Lieberman (1967) shows:

(1) I'll move on Saturday.

(2) I'll move on Saturday.

In this case, the pause or extended space reveals which of two possible surface structures is intended. Second, in an examination of intonation patterns assigned during adults' oral reading of prose, Goldman-Eisler (1968) reports that pauses were introduced by these readers at major phrase boundaries. Third, Cromer (1970) found that deficient adult readers benefited from the presence of extended spaces at phrase boundaries.

Three experiments were conducted to assess effects of a printed cue system depicting both stress-pitch and pause locations on children's reading. Performances with this system were compared to performances on standard text with uniform word size and spacing and on text in which word-size and word-spacing cues were varied unsystematically. Average second and third grade readers and below-average fourth grade readers were sampled. One or several days of training and practice on the experimental or control texts was provided. Numerous aspects of reading performance were measured to detect effects of the printed cue system: oral and silent reading speed, miscues, free and prompted recall, cloze responses. Comparisons were conducted between subjects matched in reading ability, and also each subject served as his own control. It was expected that readers inexperienced in synthesizing printed words into sentences (i.e., beginning readers) and readers having trouble with this process (i.e., fourth graders judged as having reading comprehension problems) would benefit from the printed intonation cue system and would reveal superior reading performance on intoned text.

Experiment One

Second and third graders were selected for the first study since it was expected that printed intonation cues would prove most effective for beginning readers lacking much experience in the synthesis of printed words into sentences. Several measures of reading behavior were taken in order to identify which aspects might be most sensitive to cue effects. In line with results of Ehri & Wilce's (1974) study, it was expected that, with minimal training, the utility of the intonation cues would become operative for Ss struggling to identify the appropriate speech correlates of print, and that Ss' reading speeds would show the first signs of facilitation.

Subjects. Nine sets of 3 males and nine sets of 3 females were selected from the second and third grades of three lower to lower-middle class schools in Sacramento, California ($N = 54$). Members of each set were matched in reading ability as measured by either the Wide Range Achievement Test or the Slossen Oral Reading Test administered at the beginning of the school year. The grade-level-equivalents of the reading scores ranged between 1.6 and 3.5, with a mean of 2.7. Set members were assigned randomly to the three text treatment conditions. The mean age of the second graders ($N = 27$) was 7-10, and of the third graders ($N = 27$) was 8-10. All of the subjects spoke English as their native language. The children were tested during the months of January, February and March.

Materials. Eleven stories ranging in length from 147 to 534 words were selected from books written for second-grade level readers. (See Appendix F for these stories.) Printed intonation cues were determined by two adult speakers who read the stories and independently assigned to

each word one of three print sizes to reflect the amount of stress-pitch occurring in an oral rendering of the text. The raters agreed on 65-80% of the word sizes assigned in the stories. Assignments were then compared, and discrepancies resolved. Also, the pause locations occurring at phrase boundaries were determined. These specifications were used to print the stories. Each word appeared in large, medium, or small type. Phrase boundary pause cues were depicted by extending the spaces between words. Lines of print were always terminated at one of the pause points.

In addition to the intoned text, two other texts were printed. One was a random version in which the three word size and extended inter-word space cues were assigned unsystematically. (However, the number of words depicted of each of the three sizes and the number of extended spaces employed in the random version remained identical to those in the intoned text, line by line.) The final version was a standard text in which word size was constant throughout the story and equivalent to the middle of the three word sizes in the other texts, and spaces between words were uniform. Examples of text types are presented in Figures 2 through 4. A

Insert Figures 2, 3, and 4 about here.

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computer-graphics computer editing program developed at Bell Laboratories, Murray Hill, New Jersey, was used to generate all of the texts.[1]

For each story, the more difficult words were printed on flash cards. These were used in a word recognition training task given prior to the reading of each story.

Procedures. Children were seen individually by one of two female experimenters on four separate days, each session lasting 20-45 minutes. The schedule of events for the sessions is summarized in Table 1. A pre-test measuring Ss' oral and silent reading speeds and their word recog-

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Insert Table 1 about here.

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nition and story recall capabilities was administered on the first day. On Days 2 and 3, subjects were given instruction and practice reading one of three text types (intoned, random, standard). Before encountering their assigned text type, all Ss were shown a page of intoned text and were given instruction and practice in using the word-size cues to read with expression (i.e., "Say the big words loud, the little words soft, and the middle-size words inbetween.") Also, attention was drawn to the bigger space between some words, and Ss were told, "That means to stop a moment like you do at the end of a sentence." S and E then read a page of intoned text together, S reading a line, E reading the same line, and S repeating it. This procedure was intended to model the behavior of reading with expression and to assist the child in imitating how one uses the printed cues to read with expression. Then the child was switched to his assigned text type and received practice reading five stories. Prior to each story, he was tested and trained to insure that he could recognize

Table 1
Summary of Events in Experiment One

Day 1: Pretest

1. Word recognition test and training
2. Oral and silent reading of standard print text ("Joe Keller's Farm")
3. Free and prompted recall of story

Day 2: Training and Practice

1. Preliminary instructions and practice in reading with expression: S notices loud and soft words in speech, S distinguishes three printed word sizes, S produces spoken correlates of printed intonation cues (i.e., loud and soft words, extended pauses between some words)
2. Practice reading three stories (printed with standard, intoned, or random cues) orally with expression. Sequence of events for each story:
   a. Word recognition test and training
   b. Practice and feedback in reading with expression: S reads sentence; this procedure is repeated on each sentence in first paragraph of story
   c. S reads entire story orally
   d. Prompted recall of story

   Titles of stories: "How the Cactus Helps Itself", "Lost in the Mountains", "Grandma and the Skunks".

Day 3: Training and Practice

Repetition of Day 2, Part 2 procedure described above except that the final 3 pages of the second story are read silently. Titles of stories: "More Than a Horse", "The Stolen Bush".

Day 4: Test

S reads three stories, one in standard print, one in intoned print, and one in random print.
Sequence of events for each story:
   a. Word recognition test end training
   b. Oral reading of Page 1, silent reading of Page 2, oral reading of Page 3
   c. Free and prompted recall of story

Titles of stories: "The Big Man", "The Very Special Passenger", "Pete Gets His Hat".

the more difficult words in the story. E pronounced and defined unknown words and then repeatedly presented them to a criterion of one correct recognition. The modeling-imitation procedure was followed in reading the first paragraph of each story. Then the child was told to read the story by himself, and he was reminded to read with expression and to attend to the meaning of the story since he would be asked some questions about it afterwards. Whereas the other pages were read orally, the final three pages of the fifth story were read silently.

On the fourth day, the effects of training were assessed. The child was given three stories to read, one printed in each of the three text types (intoned, random, standard). For each story, S completed word recognition training, then alternated oral and silent reading of the three pages of the story, then recalled the story, and finally answered some questions about the story.

In contrast to the structure of the pretest and training sessions which were identical for all Ss, the order of the posttest stories and the text type imposed on each story was varied for each subject triplet. This counterbalancing of tasks was intended to eliminate effects due to differential difficulty reading or remembering any particular story or printed text type presented in any particular order. This made it possible to compare the reading performance of each subject against himself on each of the three text types. In the previous study by Ehri and Wilce (1974) only between-subjects comparisions were conducted.

All four sessions were tape recorded and subsequently transcribed. E used a stopwatch to time S's reading of each printed page.

Results

Several analyses of variance were used to assess effects of the independent variables upon one or another aspect of reading performance. A randomized block design in which subjects were matched on the basis of reading achievement scores was employed. The independent variables were: Grade (2nd vs. 3rd), Treatment Group (training on standard vs. intoned vs. random printed texts types), and Print Cue System Being Read (standard vs. intoned vs. random). The dependent measures were: free recall (number of facts remembered and reported after reading story); prompted recall (number of questions answered correctly after reading story and recalling it); miscues (number of oral reading errors produced while reading story); comprehending score (a measure devised by Goodman, 1973, entailing the number of miscues which are syntactically and semantically consistent with previously read text divided by total number of miscues produced); reading speed (measured in number of syllables per second). Speed measures were taken at the end of training as well as on the posttest. In the analysis of reading speed scores, oral vs. silent processing of the text was treated as an additional independent variable.

During the posttest, each subject read three different stories, one printed in each of the three cue systems. To eliminate effects of order and story, the text type for each story and the order of reading the stories were counterbalanced among subjects. Because different stories

were read yielding varying distributions of scores, it was necessary to standardize recall, miscue, and comprehending values to permit within- and between-subject comparisons. Scores of all 54 subjects on each measure were transformed to T-scores before the analysis of variance was conducted.

Triplets were formed on the basis of reading achievement tests and members were randomly assigned to one of the three treatment groups. To verify that groups were indeed matched in reading abilities, analyses of variance were run on pretest measures of the various dependent variables as well as word recognition scores. Results yielded no differential scores as a function of the treatment group factor, affirming that the treatment groups were indeed comparable in word recognition ($F < 1$), miscues ($F < 1$), comprehending ($F < 1$), free recall ($F < 1$), prompted recall ($F < 1$), and speed ($F < 1$).

In the analyses of effects produced by training, few comparisions emerged as significant. Mean values are reported in Tables 2 and 3. In

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Insert Tables 2 and 3 about here.

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the analysis of reading speed, a main effect of silent vs. oral processing emerged. As evident in Table 2, children read faster silently than orally during the final day of training, $F(1,16) = 8.06$, $p < .05$, and also during the posttest, $F(1,16) = 9.77$, $p < .01$.

In the analyses of the remaining dependent variables on the posttest, no significant effects were detected ($p > .05$). Inspection of Table 3 reveals that the three groups performed similarly in reading and recalling the various printed text types.

Though grade level was included as a factor, it was not expected to yield effects since second and third graders did not differ substantially in reading ability. The grade-level means of the two groups on the standardized reading test were 2.4 for the second graders and 2.9 for the third graders, $F(1,8) = 5.12$, $p > .05$. On the measure of word recognition included in the present study, out of 144 words presented, second graders failed to recognize a mean of 24.2 words and third graders 21.1 words ($F < 1$). Analysis of variance on standardized test scores, word recognition scores and the various pretest and posttest scores failed to reveal any differences as a function of grade ($p > .05$).

In the selection of triplets, there was a slight imbalance in the number of each sex selected per grade (i.e., 5 female and 4 male second-grade triplets; 4 female and 5 male third-grade triplets). Since no effects of grade emerged, scores were re-analyzed with sex as a factor and grade ignored. Results disclosed no main effects or interactions ($p > .05$).

From the above findings, it appears that training and practice in the use of printed intonation cues do not facilitate any aspect of reading performance among beginning readers, contrary to expectations. Some

Table 3
Mean Scores on Measures of Oral and Silent Reading Speed
As a Function of Treatment Group and Printed Text Type

MEASURES	PRINTED TEXT TYPE					
TREATMENT	PRETEST	LAST TREATMENT	POSTTEST			
Speed-Oral	Standard	Treat. Text	Standard	Intoned	Random	X
Standard	1.91	1.83	1.94	1.87	1.76	1.86
Intoned	1.91	1.77	1.82	1.85	1.82	1.83
Random	1.81	1.77	1.77	1.78	1.79	1.78
X	1.88	1.81[b]	1.85	1.83	1.79	1.82[a]
Speed-Silent						
Standard	1.92	2.38	2.47	2.20	2.45	2.37
Intoned	1.91	1.96	2.03	1.94	2.04	2.00
Random	1.83	2.00	2.00	2.06	2.05	2.02
X	1.89	2.11[b]	2.15	2.07	2.18	2.13[a]

[a]Main effect of mode: MS_W (16) = .803, $p<.01$

[b]Main effect of mode: MS_W (16) = .309, $p<.05$

Table 3
Mean Transformed Scores on Posttest Reading Measures
As a Function of Treatment Group and Printed Text Type

MEASURES	PRINTED TEXT TYPE				
TREATMENT	PRETEST	POSTTEST			
Free Recall	Standard	Standard	Intoned	Random	S.D.
Standard	51.7	50.5	50.7	48.7	
Intoned	50.7	52.5	51.3	52.8	
Random	47.8	46.9	48.9	49.0	
$\bar{X}$		50.0	50.3	50.2	(8.2)
Prompted Recall					
Standard	51.7	50.1	52.1	49.1	
Intoned	49.4	51.3	51.3	52.2	
Random	48.9	49.0	50.2	44.8	
$\bar{X}$		50.1	51.2	48.7	(8.1)
Comprehending					
Standard	47.9	52.0	50.3	50.4	
Intoned	51.9	49.5	48.2	49.3	
Random	49.9	50.1	49.4	51.1	
$\bar{X}$		50.5	49.3	50.3	(11.1)
Miscues					
Standard	51.7	51.5	52.1	49.3	
Intoned	48.4	51.5	49.3	48.1	
Random	49.9	51.0	49.5	47.8	
$\bar{X}$		51.3	50.3	48.4	(8.2)

alternative explanations are possible and need to be considered.

The study by Ehri and Wilce (1974) obtained superior reading speed scores for third graders but not fourth graders given intoned text to read. These results suggested that intonation cues might prove beneficial for less proficient readers, and so the intent of the present study was to examine effects with beginners. However, although effects may be specific to beginners, it may be that these beginners must be sufficiently proficient in certain respects, namely word recognition, to profit from printed intonation cues. The model of reading acquisition proposed by LaBerge and Samuels (1974) suggests that not until beginning readers achieve a stage of automaticity in reading printed words do they have sufficient residual attention available to process any printed cues other than letters in words. It may be that despite attempts to train subjects to recognize difficult words prior to reading the stories, many children's word recognition capabilities were not sufficiently automatic to enable them to pay attention to extra-letter cues such as word size and word spacing.

To check on the possibility that intonation cues might have boosted performance mainly among those more proficient at recognizing words, triplets were grouped according to their word recognition errors (low, medium and high numbers of errors). Mean number of word recognition errors in the three groups were 9.4, 21.7, and 36.8 (based on 144 possible errors), $F(2,10) = 20.01$, $p < .01$. Post hoc Tukey pairwise comparisons indicated that the groups differed significantly from each other. Performances of these three groups on the various dependent measures were then examined. In the analyses of variance, level of word recognition ability was treated as an independent variable with three levels (high, medium, low), and the factors grade level and sex were ignored. Main effects as a function of word recognition ability level emerged in the analyses of free recall, $F(2,10) = 9.15$, $p < .01$, miscues, $F(2,10) = 5.43$, $p < .05$, speed during the final treatment, $F(2,10) = 7.28$, $p < .05$, and posttest speed, $F(2,10) = 6.71$, $p < .05$. However, this factor interacted with none of the independent variables in any of the analyses. Inspection of mean values verified that printed intonation cues were not associated with superior reading performances of any sort even among those more skilled at recognizing words. Thus, this hypothesis failed to receive confirmation in the present study.

In order to obtain a clearer picture of performances in Experiment 1, Pearson product-moment correlation coefficients were calculated between pairs of various measures of reading behavior. Estimates of the reliability of each of the measures appear in Table 4. In the present study each

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Insert Table 4 about here.

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reading behavior was observed several times, during the pretest, training, and the posttest. The correlations listed are between pairs of identical measures. From this table it is apparent that all but the comprehending measure can be considered reliable. They all yielded correlations sig-

Table 4
Intercorrelations Among Various Measures of Same Dependent Variable — Indices of Reliability

READING BEHAVIOR	CORRELATIONS 1	2	3	4	5	6	Total Signif.	Range of Standard Deviat.
1. Oral read. speed	.90	.90	.89	.90	.87	.90	**	.40-.47
2. Silent read. speed	.74	.84	.79	.67	.61	.67	**	.63-.79
3. Miscues	.69	.76	.77	.76	.76	.74	**	9.2-10.7
4. Comprehending	.21	.49**	.07	.08	.14	.24		8.7-10.9
5. Free recall	.63	.63	.56	.62	.52	.55	**	9.0-11.0
6. Prompted recall	.64	.42	.46	.62	.47	.38	**	9.5-10.4

**$p<.01$

nificant at $p < .01$. In contrast, only one of the comprehending correlations was significant, and the remainder were very low.

In calculating correlations between different measures of reading behavior, in cases where there was more than one score, values were summed for each subject and the result was correlated. Correlations coefficients together with their level of significance are given in Table 5. In interpreting these values, it is important to note that most

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Insert Table 5 about here.

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are not independent, that Variables 4-10 were measures taken on the same reading performances. Thus, substantial correlations are to be expected.

Inspection of values in Table 5 reveals that grade was not significantly related to any of the reading measures taken in the study. This was also true for age. Reading achievement scores were correlated with several other measures: word recognition errors, oral reading speed, miscues, and free recall. This suggests that blocking subjects on this variable was appropriate as a means of reducing error variance.

The measure correlating with the greatest number of other measures (7 out of 9) was oral reading speed. In contrast, silent reading speed displayed the poorest record (1 out of 9). This discrepancy suggests the greater significance of oral reading as an index of reading ability among beginners. Very likely it is not until the child becomes more proficient that he learns to control the silent reading process and hence it comes to reflect other aspects of his reading.

Word recognition scores were correlated with several other measures of reading. This may have been a local effect resulting from the fact that the words tested were taken from the stories read. Alternatively it may have more general significance and reflect the basic importance of word recognition skill for beginning reading proficiency. Also, miscue scores and prompted recall values were related to several other measures. Somewhat surprising was the significant relationship found between prompted recall and the comprehending measure ($r = .35$, $p < .01$). Goodman (1974) failed to find such a relationship between what he considers a measure of in-process comprehension and post-reading comprehension involving memory. Another interesting finding was that, though free recall yielded somewhat higher reliabilities (see Table 5), prompted recall correlated with a greater number of other measures of reading than free recall (i.e., 4 vs. 1). Perhaps the vocabulary needed to answer recall questions is also the vocabulary more likely to miscue and to prolong reading time when it is unfamiliar. In contrast, free recall measures allow the subject to receive credit for what he does remember and so are less sensitive in distinguishing the extent to which all parts of the story are processed and comprehended.

In order to use each subject as his own control in the present experiment, several stories were utilized during the posttest and each

Table 5

Expt. 1: Intercorrelations Among Dependent Measures

	(Gr) 1	(Age) 2	(Ach) 3	(Word) 4	(Oral) 5	(Sil) 6	(Mis) 7	(Com) 8	(Free) 9	(Prom) 10	no. of signif. correl.
1. Grade	--	.89**	.48**	-.10	-.07	-.13	.05	.09	.06	.09	2
2. Age	.89**	--	.41**	.00	-.12	-.11	.12	.05	.04	.11	2
3. Read. Achievement	.48**	.41**	--	-.56**	.45**	.17	-.32*	.22	.27*	.21	6
4. Word Recog. Errors	-.10	.00	-.56**	--	-.75**	-.21	.61**	-.51**	-.22	-.27*	5
5. Oral Read. Speed[a]	-.07	-.12	.45**	-.75**	--	.50**	-.48**	.37**	.37**	.32*	7
6. Silent Read. Speed[a]	-.13	-.11	.17	-.21	.50**	--	.24	-.10	.06	-.05	1
7. Miscues[a]	.05	.12	-.32*	.61**	-.48**	.24	--	-.62**	-.18	-.35**	5
8. Comprehending[a]	.09	.05	.22	-.51**	.37**	-.10	-.62**	--	.03	.35**	4
9. Free recall[a]	.06	.04	.27*	-.22	.37**	.06	-.18	.03	--	.66**	3
10. Prompted recall[a]	.09	.11	.21	-.27*	.32*	-.05	-.35**	.35**	.66**	--	5

*$p<.05$

**$p<.01$

[a]These represent sums of dependent measures.

subject was given one or another to read in each of the three print types. Stories and order of presentation were counterbalanced among triplets of subjects, and scores on each of the stories (read by an equal number of subjects from each training condition) were converted to T-scores to permit comparison of each subject's performance in the various conditions. These T-scores were reported in Table 3. It is of interest to examine the absolute levels of performance on the various stories to determine how comparable they were in difficulty and how much variance they yielded. Values presented in Table 6 indicate that the posttest stories were quite

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Insert Table 6 about here.

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similar, and they were slightly longer and more difficult than the pretest story.

Experiment Two

The second experiment was designed to explore whether printed intonation cues might prove useful to slightly older readers who were having difficulty learning to read. It was expected that such children would very likely be less troubled by word recognition difficulties than by comprehension problems. Cromer (1970) found that adults diagnosed as having adequate reading vocabularies but lacking syntactic-semantic organizational skills benefitted from word spacing cues included to distinguish phrase boundaries in printed text. It was anticipated that poor 4th grade readers might find intonation cues useful for grouping word strings into syntactic units and processing their meanings.

Subjects. Fourth graders considered below grade level in their reading were selected from a lower-middle class school in Sacramento, California. Ten pairs of children, three female and seven male pairs, were distinguished as having reading difficulties and were judged as being matched in reading ability by their teachers. The mean grade-level equivalent reading achievement score of these children on the California Test of Basic Skills was 2.5. Members of pairs were assigned randomly, one to the intonation print training group and one to the random print training group. The mean chronological age of the subjects was 10-2 years. All children spoke English as their native language. They were tested during the months of April and May.

Materials. The same printed versions of the stories used in Experiment One were employed in Experiment Two. In addition, materials were created and printed for a sentence recall task and also a cloze test. The more difficult words were printed on flash cards and word recognition training preceded the reading of each story.

For the sentence recall task, 15 pairs of sentences (total of 30) plus three practice sentences were written. Members of each pair were matched in grammatical form and number of words. The 15 pairs varied in syntactic form and contained basic vocabulary words which should have been familiar to subjects. These sentences, listed in Table 7, were assigned

Table 6
Absolute Values of Scores on Dependent
Measures Before Transformations

MEASURES	PRETEST STORY	POSTTEST STORIES		
	Joe Keller's Farm	Big Man	Pete's Hat	Special Passenger
Miscues				
Mean	7.7	9.7	12.2	10.5
S.D.	6.0	6.0	7.5	6.9
Range	0-25	2-27	1-37	1-30
Comprehending				
Mean	.79	.67	.72	.73
S.D.	.19	.20	.18	.20
Range	.25-1.00	.16-1.00	.35-1.00	.25-1.00
Free Recall				
Mean	8.3	16.2	13.3	12.1
S.D.	3.8	6.9	5.9	5.6
Range	0-17	0-36	0-24	1-28
Prompted Recall				
Mean	9.9	14.7	12.8	7.1
S.D.	3.6	3.1	3.8	2.1
Range	3-21	6-19	4-19	1-11
LENGTH OF STORIES				
No. Syllables	296	382	365	387
No. Words	254	316	306	318
FLESCH READABILITY SCORE	98.6	102.7	98.3	104.2

word size and spacing values and sent to Bell Laboratories to be printed.

Insert Table 7 about here.

The three printed forms of each sentence (standard, intoned, random) were each pasted in one line on a blank white card with a row of dots at the end replacing the final word which was pasted on the back of the card. For the random sentences, word size and spacing assignments were unsystematic except that the number of words in each of the three sizes and the number of extended spaces were identical to the intoned version of the same sentence.

For the cloze task, three printed versions (standard, intoned, random) of two stories used in Experiment One were modified so that every fifth word was blacked out. That is, a black block was laid over the word covering the letters but preserving the word's length and overall size.

Procedures. Each child was seen individually by a female experimenter on five separate days, with daily sessions lasting 15-40 minutes. The schedule of events is summarized in Table 8. Procedures resembled those

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Insert Table 8 about here.
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in Experiment One except in the following ways: (1) no pretest was given; (2) instruction in the meaning and use of the word size and spacing cues received greater stress (i.e., prior to the reading of each story during training, Ss were reminded to use the printed cues); (3) during the posttest, subjects were given only trained (either intoned or random) and standard print, not the other non-trained text type to read; (4) only oral reading speed was measured in the posttest, not silent speed; (5) two additional tasks (sentence reading/recall and cloze) were included to assess effects of the printed cues on some additional reading behaviors; and (6) a separate control group given practice reading standard print was not included.

In the sentence reading and recall task, subjects were told to read each sentence orally and to turn the card over for the final word. If a word was not known, they were to guess or skip it. As soon as they finished reading the sentence, they were to repeat it from memory. Reading speed was timed from the uncovering of the card when E said "Begin" to the turning of the card at which point a click was registered on the tape by an electrical device activated by the experimenter. Subjects read two sets of 15 sentences, one in standard print and one in the trained print, either random or intoned. Prior to beginning the task, they received practice reading and recalling three sentences in standard print.

In the cloze task, subjects were told to read the stories and to guess at the missing words as quickly as possible. Prior to reading the standard and trained text types, they received practice reading a story

Table 7
List of Sentence Pairs in Sets A and B

1.A. The cat falls on the sheep that the duck hides under.
B. The mouse bumps into the rabbit that the chicken hops on.

2.A. Jim must have gone over to the park on the bus to play with the green boat his father made.
B. Tom must have gone up into the hills in the truck to put out the hot fire the bear started.

*3.A. The mother tries to find the milk to feed the baby so she can hold him.
B. The teacher needs to look for the pen to write the letter so she can send it.

*4.A. Good men gave poor boys wet wagons found outside without wheels.
B. Fat mothers gave sick girls pretty plants picked outside without flowers.

*5.A. It takes a lot of money for someone to buy a car as fast as that one.
B. It takes a lot of time for someone to read a book as fat as that one.

*6.A. The mother standing on the blue chair threw the soft ball the puppy wanted.
B. The girl sitting on the warm bed broke the pretty bottles the teacher painted.

7.A. Sitting rabbits are watching flying fish biting sleeping bears.
B. Roaring lions are catching singing birds chasing floating balloons.

8.A. Eating warm soft cookies makes old dogs very fat.
B. Washing big dirty trucks makes little boys very tired.

*9.A. The cow that the pig pushed climbed into the tall black box.
B. The monkey that the dog scared ran into the small red car.

*10.A. The teacher said she would not give the white mouse that likes to dig up bugs to the mean girls.
B. The farmer said he would not sell the tall horse that likes to wear new hats to the nice boys.

*11.A. The boy was so tired after he got to school that when he read his book he fell asleep.
B. The man was so hungry after he fixed his car that when he drove home he ate his shoe.

*12.A. The cow that kicked the fox wants to ride on the bear.
B. The lion that bit the pig wants to hunt for the sheep.

Table 7 continued

*13.A. The cook would have made the cake Jane liked if she had helped her.
B. John would have looked for the key the man wanted if he had called him.

14.A. The round wheels on the bus that is colored orange were cleaned with all the rags the girl found.
B. The sweet candy in the bag that is made of paper was eaten by all the rabbits the boy lost.

*15.A. The spotted dog stands on the white horse that jumps over the dirty pig.
B. The brown pony laughs at the wet fish that plays with the yellow chicken.

*These sentences were employed in Experiment 3 as well as Experiment 2.

Table 8
Summary of Events in Experiment Two

Day 1: Training and Practice

1. Preliminary instructions and practice in reading with expression: S notices loud and soft words in speech, S distinguishes three printed word sizes, S produces spoken correlates of printed intonation cues (i.e., loud and soft words, extended pauses between some words)

2. Practice reading three stories (printed with standard, intoned or random cues) orally with expression.
   Sequence of events for each story:
   a. Word recognition test and training
   b. Reminder to attend to word size and pause cues in reading with expression
   c. Practice and feedback in reading with expression: S reads sentence, E reads same sentence, S rereads sentence; this procedure is repeated on each sentence in first paragraph of story.
   d. S reads entire story orally
   e. Prompted recall of story
   Titles of stories: "How the Cactus Helps Itself", "Lost in the Mountains", "More Than a Horse"

Day 2: Training and Practice

Repetition of Day 1, Part 2 procedure described above for two stories except that the final three pages of the second story are read silently.
Titles of stories: "Wait for William", "The Stolen Bush"

Day 3: Test: Story Reading

Two stories are read, one in standard print and one in the training print (intoned or random). Sequence of events for each story:
a. Word recognition test and training
b. S reads story orally
c. Free recall and prompted recall of story
Titles of stories: "The Very Special Passenger", "Pete Gets His Hat"

Day 4: Test: Sentence Reading and Recall Task

Two sets of sentences are read and recalled, one in standard print and one in the training print (intoned or random). Sequence of Events:
a. Practice procedures with sample sentences
b. S reads each sentence orally, turns card over to read final word, repeats sentence from memory.

Day 5: Test: Cloze Procedure

Two stories are read, one in standard print and one in training print. Prior to reading them, S is given practice reading and guessing at the blank words.
Titles of stories: "Grandma and the Skunks", "The Big Man".

in standard print with words blocked out to become familiar with the cloze procedure.

The order of stories was identical for all subjects during training. However, for the posttests, the order of the printed text types and the stories or sentence sets was counterbalanced among subject pairs.

The dependent measures employed in Experiment One were also measured in Experiment Two (except for silent reading speed on the posttest). Some additional measures were obtained on the new tasks. In the sentence recall test, the number of miscues, the mean proportion of words recalled correctly per sentence, and the mean sentence reading latencies (syllables per second) were recorded. In the cloze test, the proportion of blank words guessed correctly was determined. Scores were transformed to T-scores where necessary for between-story comparisons.

Results

A randomized block design was employed in which subjects were paired on the basis of reading capability as rated by their teacher. Several analyses of variance were used to assess effects of the independent variables upon various measures of reading performance. The independent variables were print type on which subjects had been trained (intoned vs. random print), print type being read (standard vs. trained type), and in some cases reading mode (oral vs. silent). Hypotheses were tested at $p < .01$. Mean values on the posttests are reported in Table 9. No sig-

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Insert Table 9 about here.

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nificant main effects or interactions were detected in the analyses of oral reading speed, free recall, prompted recall, number of miscues, comprehending and cloze scores (number of verbatim correct plus semantically acceptable words produced divided by the total number of word slots) ($p > .01$). Thus, on the posttest, random Ss and intoned Ss performed equivalently on the experimental text as well as on standard text.

In the analyses of sentence recall performance, effects of the factor order of presentation (i.e., standard print read before vs. after experimental print) as well as the factors training group and text type read were assessed. In the analysis of miscues, order of print presentation produced a significant main effect. Subjects given treatment print first and standard print second produced more miscues than subjects given the reverse order, $F(1,4) = 143.36$, $p < .01$. The causes of this are unknown. No significant effects on comprehending scores or reading speed were detected ($p > .05$). In the analysis of the proportion of words recalled correctly, an attempt was made to assess effects of one additional variable, printed word size. To determine whether actual print size or the particular words chosen accounted for any observed differences, recall was compared for the same words in the treatment condition where printed sizes actually varied and in the standard condition where these words were constant in size. Of course, different words were big, medium, and small

Table 9
Mean Scores on Posttest Measures of Reading as a Function of Text Training Group and Text Print Type Read

Training Group:	INTONATION		RANDOM	
Text:	Stand.	Intoned	Stand.	Intoned
Oral Reading Speed	1.82	1.83	1.94	1.87
Free Recall[a]	47.1	54.7	48.8	49.5
Prompted Recall[a]	49.0	54.5	46.8	49.6
Miscues[a]	55.0	52.2	47.2	45.6
Comprehending[a]	45.6	43.4	57.5	53.5
Cloze – Proportion Acceptable	46.6	49.9	50.1	52.0
Sentence Recall				
Speed – Syll. per sec.	1.54	1.50	1.77	1.55
Miscues	15.6	16.4	9.5	10.2
Comprehending	.71	.66	.80	.73
Proportion Words Recalled				
Big	.71	.72	.60	.62
Middle size	.67	.65	.60	.60
Little	.68	.68	.67	.59

[a]Mean transformed scores (T-scores) given

in the random and intoned sentences, so standard text counts for the two groups were based on word sizes in the respective treatment conditions. Though failing the test of significance, results revealed a main effect of this variable at $.01 < p < .05$, $F(2,8) = 4.21$. Mean values are presented in Table 9. Inspection of values reveals that recall of middlesize words was slightly lower than recall of big or little words ($\bar{X} = .63$ vs .66 vs .65, respectively).

In order to assess within-subjects effects on the posttest when Ss were given standard and trained text types to read, matched pair t-tests were conducted for intonation and random training groups separately. No significant differences were detected for most of the dependent measures (reading speed, prompted recall, miscues, comprehending, cloze, words recalled from the sentences, miscue and comprehending scores on the sentences) ($p > .01$). However, two comparisons were significant. In the analysis of free recall scores for intonation group subjects, recall was better on the intoned print text than on the standard print text, $t(9) = 3.56$, $p < .01$. In the analysis of reading speeds on the sentence recall task, Ss in the group trained on random text read the standard-print sentences faster than the random-print sentences, $t(9) = 3.12$, $p < .01$. A reasonable explanation for these effects, in light the absence of other related effects, is not apparent.

Comparison of reading speeds during training was also conducted. Silent and oral reading performances on the final day of training (with oral conducted on the first half and silent on the second half of the story) were subjected to an analysis of variance. Results reveal no effect of print type ($F < 1$). Reading mode just missed significance, with silent slightly greater than oral speed, $\bar{X} = 2.11$ vs 1.68 syllables per second, $F(1,18) = 6.54$, $.01 < p < .05$.

Pearson produce-moment correlation coefficients were calculated between pairs of the various measures of reading behavior. Estimates of the reliability of each measure (i.e., correlations of each measure with itself across stimuli) are presented in Table 10. These data reveal that all but the prompted recall and comprehending measure taken on the sentence

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Insert Table 10 about here.

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recall task were reliable at $p < .01$. In contrast to low correlations observed in Experiment 1, the comprehending measure calculated on story reading performances yielded a high reliability value here. However, the low correlations of the comprehending measure on the sentence recall task leave some doubt about its reliability.

In calculating correlations between measures, in cases where more than one measure had been obtained per subject, values were added and the result was correlated. Correlation coefficients are displayed in Table 11. It is important to note that teacher ratings of reading ability correlated highly with standard scores ($p < .01$), indicating that the basis for matching subjects was legitimate. In this regard, it is interesting to note

Table 10
Intercorrelations Among Various Measures of a
Single Dependent Variable — Indices of Reliability

READING BEHAVIOR	CORRELATIONS	SIGNIFICANCE
1. Oral read. speed	.92 to .98	**
2. Miscues	.86	**
3. Comprehending	.66	**
4. Free recall	.72	**
5. Prompted recall	.50	*
6. Cloze	.58; .65	**
Sentence Recall Tasks		
7. Reading speed	.95	**
8. Miscues	.82	**
9. Comprehending	.04	n.s.
10. Word recall (Total)	.74; .72	**

*$p<.05$
**$p<.01$

Insert Table 11 about here.
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that speed measures of reading were highly correlated with standardized scores and teacher estimates while miscues and recall scores were not. Whether this reveals a true picture of teacher and test priorities in defining or assessing reading competence or whether it results from other hidden factors awaits study.

As in Experiment 1, word recognition values were highly correlated with several other measures indicating that this is an important factor in reading competence.

Though correlations with the other measures were low, all recall measures were intercorrelated, even those involving story recall and word recall in the sentences. These values appear to reflect an aspect of reading which is independent of reading speed and even independent of Goodman's in-process comprehending measure.

The most impressive measure of reading competence uncovered in the present study was the cloze measure which correlated significantly with 11 out of 13 other measures. Apparently, a number of reading processes are important for successful cloze performance. As recognized by Guthrie (1973) among others, this appears to yield a powerful single index of a child's reading competence.

Though speed, recall, and miscue values in the sentence recall task were each significantly correlated with their sister values taken in the story reading tasks, the comprehending measure was not. This contributes to the doubt raised above regarding the reliability of this measure of reading ability. These other findings indicate that a sentence reading/recall task yields a picture of reading ability which is very similar to that revealed in paragraph reading. This is perhaps surprising in light of the very different nature of these two tasks.

As in Experiment 1, some of the scores were transformed to T-values to permit comparisons among performances on different stories. The original mean scores on the various stories are presented in Table 12. Inspection of values reveals that the measures taken on the two stories

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Insert Table 12 about here.
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yielded similar means, except perhaps in the case of prompted recall. Also, one cloze story proved slightly harder. Comparison of scores here to those in Table 6 of Experiment 1 indicates that though they were below grade-level in their reading, subjects in the present study (4th graders) achieved somewhat better reading scores than subjects (2nd and 3rd graders) in Experiment 1 except in the case of miscues. Both the means and standard deviations of the 4th graders were higher indicating a greater number and wider variation in reading errors than the average 2nd and 3rd grade

Table 11
Experiment 2: Intercorrelations
Among Dependent Measures (N=20)

	(Age) 1	(RL-T) 2	(RL-S) 3	(Wo) 4	(Or) 5	(Sil) 6	(Mis) 7	(Comp) 8
1. Age	--							
2. Reading Level (Teacher Estim.)	-.05	--	-.07	.44	-.27	-.20	.15	.10
3. Read Level (N=17) (Stand. Test)	-.07	.78**	--	-.48*	.77**	.68**	-.21	.07
4. Word Recog. Errors	.44	-.48*	-.71**	--	-.49*	-.22	.52*	-.32
Text Reading								
5. Oral Read. Speed	-.27	.77**	.70**	-.49*	--	.83**	-.29	-.01
6. Silent Read. Speed	-.20	.68**	.51*	-.22	.83**	--	.20	-.14
7. Miscues[a]	.15	-.21	-.25	.52*	-.29	.20	--	-.33
8. Comprehending[a]	.10	.07	.07	-.32	-.01	-.14	-.33	--
9. Free Recall[a]	.30	.23	.09	-.12	-.10	.19	.15	.34
10. Prompted Recall[a]	.01	.37	.49*	-.42	.40	.19	-.29	.27
11. Cloze[a]	-.08	.49*	.61**	-.63**	.47*	.27	-.45*	.48*
Sentence Recall								
12. Reading Speed[a]	-.27	.82**	.73**	-.54*	.94**	.77**	-.37	.02
13. Miscues[a]	.22	-.41	-.22	.73**	-.35	-.19	.53*	-.29
14. Comprehending[a]	-.30	.43	.38	-.61**	.40	.26	-.28	.36
15. Word Recall (Tot)[a]	.15	.10	.27	-.18	.11	.07	-.07	.24

	(FR) 9	(PR) 10	(Cloz) 11	(RS) 12	(Mis) 13	(Comp) 14	(WR) 15
1. Age							
2. Reading Level (Teacher Estim.)	.30	.01	-.08	-.27	.22	-.30	.15
3. Read Level (N=17) (Stand. Test)	.23	.37	.49*	.82	-.41	.43	.10
4. Word Recog. Errors	-.12	-.42	-.63**	-.54*	.73**	-.61**	-.18
Text Reading							
5. Oral Read. Speed	.10	.40	.47*	.94**	-.35	.40	.11
6. Silent Read. Speed	.19	.19	.27	.77**	-.19	.26	.07
7. Miscues[a]	.15	-.29	-.45*	-.37	.53*	-.28	-.07
8. Comprehending[a]	.34	.27	.48*	.02	-.29	.36	.24
9. Free Recall[a]	--	.62**	.46*	-.02	-.07	.02	.58**
10. Prompted Recall[a]	.62**	--	.84**	.29	.00	.30	.78**
11. Cloze[a]	.46*	.84**	--	.48*	-.32	.61**	.62**
Sentence Recall							
12. Reading Speed[a]	-.02	.29	.48*	--	-.44	.53*	.01
13. Miscues[a]	-.07	.00	-.32	-.44	--	-.39	.17
14. Comprehending[a]	.02	.30	.61**	.53*	-.39	--	.09
15. Word Recall (Tot)[a]	.58**	.78**	.62**	.01	.17	.09	--

*$p<.05$
**$p<.01$
[a]These values are based on sums of dependent measures

Table 12
Absolute Values of Scores on Dependent Measures Before Transformations

MEASURE	POSTTEST STORIES: Pete's Hat	Special Passenger
Miscues		
Mean	16.2	16.4
S.D.	11.7	10.8
Range	5-60	2-52
Comprehending		
Mean	.79	.81
S.D.	.15	.17
Range	.40-1.00	.50-1.00
Free Recall		
Mean	17.0	15.2
S.D.	6.7	4.8
Range	3-29	8-25
Prompted Recall		
Mean	15.9	8.8
S.D.	2.1	2.3
Range	12-19	3-14
	Big Man	**Grandma & Skunks**
Cloze — No. Correct/No. Possible		
Mean	.47	.38
S.D.	.11	.09
Range	.27-.68	.19-.56
Cloze — No. Correct + Acceptable/ No. Possible		
Mean	.72	.60
S.D.	.12	.11
Range	.51-.90	.43-.83

readers of the previous study.

Experiment Three

The third experiment was intended to replicate the original study conducted by Ehri and Wilce (1974) who reported facilitation of reading speed among third graders as a consequence of printed intonation cues. The first two experiments of the present project differed from the original study in several respects. Because it is unclear which difference might be the critical one, and because it is possible that previous positive results were spurious, a result of chance, replication was regarded as essential in the face of two experimental failures.

One difference between the two experiments reported above and the Ehri and Wilce study was that Ss in E-1 and E-2 were told explicitly about the printed word size cues and how they might prove useful, and Ss were given practice producing the oral correlates of these cues. It was noticed that these Ss tended to go slower in reading the treatment texts, perhaps because they were trying to attend to these cues. Since the opposite effect had been detected in the original study (i.e., faster speeds), this procedure was dropped in E-3. If the cues supplied useful information, then it was thought that readers might come to depend upon them spontaneously.

Subjects. Third and fourth graders (N = 63) were sampled from two middle-class schools in Davis, California. Twenty-one triplets of Ss were formed on the basis of very similar total reading scores on the Metropolitan Achievement Test, and members were randomly assigned to one of three experimental groups. Mean grade level equivalent scores on the reading test was 4.0, with a range from 3.3 to 4.6. The mean chronological age of the children was 9-1 years. Sixteen triplets were third graders and 5 triplets were fourth graders. Nine triplets were male, 9 were female, and 3 were of mixed sex (total of 32 males and 31 females). Children were tested during the months of February and March.

Materials. Some of the same stories and sentences employed in the first two experiments were used here ("Pete's Hat," "Special Passenger," "Stolen Bush"). In addition, the two stories used by Ehri and Wilce (1974) were included ("Growing Oranges," "Mammoth"). Three printed versions of all the materials were used: standard, intoned, random. The sentence recall task was comprised of 10 pairs of sentences. These were employed in Experiment Two and are listed in Table 7. Pairs were divided to create two matched sets of sentences, one set to be read silently, one orally by Ss. To introduce a delay between the reading and recall of each sentence, subjects engaged in naming colors on cards displaying 20 blocks of 8 different colors.

Procedures. Each child was tested individually by a female adult on two separate days, with daily sessions lasting 30 to 60 minutes. The schedule of events is summarized in Table 13. Procedures differed from

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Insert Table 13 about here.

Table 13
Summary of Events of Experiment Three

Day 1: Training and Practice

1. Introduction to Print Size: Intonation and random print subjects are shown a page of their print type, the word size variations are described, and Ss are asked to point to each of the three sizes. Standard Ss are shown a standard-print page, and the print is described as middlesize.

2. Practice reading two stories aloud: stories are printed in intoned, random, or standard print; E reads first page, child is told to follow print with eyes, E presents recall questions; child and E read alternate pages aloud, E asks recall questions after each page. Titles of stories: "Pete Gets His Hat", "The Very Special Passenger"

3. Practice reading story aloud and silently: child reads entire story, first three pages aloud, second three pages silently. E asks recall questions after first half and after second half of story. Title of story: "The Stolen Bush"

4. Practice rereading first page of previous story ("The Stolen Bush"); E explains and demonstrates what reading with expression means; child makes several attempts to read page rapidly but with much expression; trials are stopped when reading is smooth and speed ceases to increase.

Day 2: Practice and Test

1. Replication of Ehri & Wilce (1974) Procedures
   a. S reads "Growing Oranges" story: E and S read alternate pages (pp. 1-4) aloud, S following print with his eyes when E reads; S reads final page silently; E asks recall questions after each page is read.
   b. S reads "Mammoth" story: S reads entire story (8 pages) silently, E asks recall questions at end.

2. Sentence Reading and Recall Test: Half of sentences are read orally, half silently.
   Sequence of events:
   a. E measures S's color naming speed.
   b. S practices performing task with 3 examples (i.e., S reads sentence on card, turns card to read final word printed on back, names colors as rapidly as possible for 12 seconds, recalls sentence).
   c. S reads and recalls 20 sentences one at a time, the first half orally and the second half silently, or the first half silently and the second half orally.

the above experiments in several respects: (1) Effects of the experimental treatment (i.e., print types) were assessed between rather than within subjects. In other words, each S was exposed to only one print type throughout the experiment, either standard, intoned or random, and reading performances were compared on the same stories between subjects rather than on different stories within the same subjects. (2) No pretest to assess reading ability was given since recent reading achievement scores were available from teachers. (3) No word recognition training was given prior to each reading task since readers were thought to be familiar with words contained in the sentences and stories. (4) Instruction in the meaning and use of word size and spacing cues was not given. The child's attention was merely drawn to word size differences in the intoned and random conditions and he was told, "The different print sizes may help you to read better." No mention was made of spacing cues. (5) The sentence recall task was shortened, a delay was introduced between reading and recall of each sentence, and no cloze task was employed. Also miscue and comprehending measures were not obtained on the stories since the number of errors committeed on orally read stories was not sizeable. (6) Only prompted recall, not free recall of stories was elicited. (7) A new task was included, one requiring S to reread an intoned or random print page of text several times orally with expression. It was thought that intonation cues might prove useful and enable Ss to read faster with fewer errors. Miscues were counted here.

Following the introduction in which word size variations were pointed out to subjects in the intoned and random groups, two stories were read aloud, each page alternately by E and S. S was told to follow the lines of print with his eyes, to read as fast as he could but to think about the meaning because he would be asked some questions at the end of each page. S read the third story by himself, the first half aloud, the second half silently. E tested his recall after each section. The final task of the first day was to reread the first page of the previously read story several times. E explained, "I would like you to pretend you are a teacher reading the story to a group of children. You must read the story with much expression so that the children will pay attention to what the story tells them." E explained and demonstrated what reading with expression meant before the child proceeded. S was reinforced after each trial for reading faster with better expression and without stumbling over words. Rereading was terminated after a minimum of four readings when S had ceased to improve his speed.

On the second day of testing, E and S alternated in reading four pages of the first story ("Growing Oranges") aloud, S read the final page silently, and E asked recall questions after each page. The second story ("Mammoth") was read silently by S, and prompted recall questions were presented at the end. The sentence reading and recall task followed this after S was given practice with the procedures. For each sentence, S read the sentence, turned the card over to read the final word, immediately began naming colors as fast as possible for 12 seconds, and then tried to recall the sentence he had read. Half of the sentences were read orally in a block, half silently. The order and particular set of sentences read in each mode (oral, silent) were counterbalanced among triplets. Ss reading silently were told not to reread any sentences once they had started.

Also, they were told to guess or skip any words they did not know. Their readings were timed from E's instruction, "Begin," to the flip of the card when E pressed a button registering an electronic "blip" on the tape.

Ss' reading responses were timed with a stopwatch either during testing or subsequently while the experimenter listened to a tape recording of the session. To compare reading speed across materials, latencies were converted to syllables per second.

Results

Several analyses of variance were used to assess effects of the independent variables on performance. In this experiment, hypotheses were tested at $p < .01$ and post hoc comparisions at $p < .05$. To assess effects of the principal variable, print type, either one or two-way analyses of variance were conducted, two-way for cases where reading mode (oral vs. silent) was a second factor. In all cases, the second factor was a repeated measure. Mean values are reported in Table 14. Also, to check on whether variables included for purposes of control influenced performance, analyses

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Insert Table 14 about here.

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were rerun with sex or order of presentation, or stimulus set included as variables. To equate for number of observations across cells, it was necessary to eliminate one triplet in the latter two cases. Because three triplets were of mixed sex, these were omitted in the analysis including sex as a factor. No main effects or interactions were detected as a function of these control variables.

In the analyses of reading speeds on the stories, no main effects or interactions as a function of print type were detected ($p > .01$). However, reading mode yielded significant main effects, with $F(1,60) = 23.63$, $p < .01$, in the second story, and $F(1,60) = 32.16$, $p < .01$, in the third story. As evident in Table 14, silent reading speed was faster than oral speed in both cases. One factor which was confounded with mode and which very likely contributed to this difference was the section of the story read. Silent reading always occurred on the latter part of the story following oral reading.

In addition to the above speed analyses, rereading speeds over trials were examined. Following their reading of the entire story ("Stolen Bush"), Ss reread the first page orally several times. They were told to try to read rapidly but with expression. Since speed was the measure affected by print type in the Ehri and Wilce (1974) study, it was expected that intonation cues might prove useful in this task. However, results failed to yield any differences as a function of print type ($F < 1$). There was significant improvement, though, in speed over trials, $F(4,240) = 28.11$, $p < .01$. Ss took 43 seconds the first time they read the page, then time increased to 47 seconds on the first rereading, and subsequently declined from 40, 37, to 35 seconds on Trial 4.

Table 14
Mean Scores on Measures of Reading
as a Function of Print Type Read

Dependent Measure	PRINT TYPE Std.	Intoned	Random	Mean	Standard Deviation	F(2,40)
Reading Speed (syll./sec.)						
First story (oral)	2.80	2.98	2.85	2.87	(0.57)	<1
Second story — oral	2.66	2.83	2.78	2.76	(1.43)[a]	<1
— silent	3.77	3.79	3.55	3.70	(1.09)[b]	
Rereading — best time (sec)	31.9	31.0	31.6	31.5	(7.15)	<1
Third story — oral	2.57	2.72	2.64	2.64	(1.40)[a]	<1
— silent	3.87	4.01	3.60	3.83	(1.17)[b]	
Fourth story — silent	3.67	3.64	3.07	3.46	(1.34)	1.35
Prompted recall — stories						
Second story	10.9	11.3	10.9	11.0	(2.07)	<1
Fourth story	13.5	13.7	14.0	13.8	(4.87)	<1
Sentence Read/Recall Task						
Read speed — oral	2.23	2.30	2.33	2.28	(0.68)[a]	<1
— silent	2.54	2.35	2.31	2.40	(0.33)[b]	
Proportion words recalled						
Total (oral reading)	64%	63%	63%	63%	(0.24)[a]	<1
Total (silent reading)	53%	64%	58%	58%	(0.12)[b]	
Miscues (total oral)	4.05	3.14	7.10	4.76	(6.49)	2.14
Rereading - miscues	7.21	7.91	6.25	7.12	(7.37)	1.35

[a] Error term for main effect of print type

[b] Error term for main effect of reading mode (oral vs. silent)

Because of the possibility that subjects were striving for accuracy rather than speed in their oral rereadings, the number of reading miscues was tallied and analyzed. Results indicated that none of the three treatment groups differed in the mean number of errors, $F(2,40) = 1.35$, $p > .01$. (See Table 14.) There was some tendency for errors to decline over trials, $F(4,240) = 3.00$, $.01 < p < .05$. Mean errors on the first reading were 7.6; from the first rereading to the fourth rereading, errors declined from 8.9 to 5.7. The interaction effect was not significant.

Analysis of prompted recall values revealed no main effects or interactions as a function of print type ($p > .01$).

To obtain a measure of reading speed in the sentence read/recall task, the mean numbers of syllables per second on the 10 sentences read orally and the 10 sentences read silently were calculated for each subject. An analysis of variance on these values revealed no main effects or interactions ($p > .01$). Contrary to results on the stories, subjects did not read the sentences faster silently than orally, $F(1,60) = 4.0$, $p > .01$. This suggests that differential speeds on the stories resulted from the particular section being read (i.e., first half or second half) rather than from reading mode.

To obtain a measure of Ss' sentence recall, the mean proportion of words per sentence was calculated for orally read sentences and for silently read sentences. Mean total recall values are given in Table 14. Analysis of variance of these scores revealed no effects of print type or mode ($p > .01$).

In addition to total word recall, the mean proportion of big, middlesize and small words per sentence was calculated for the intoned and random print groups. (Note that the particular words comprising these sets were necessarily different for the two groups.) To produce a baseline for the intoned group, recall of the same words was calculated for the standard print subjects (who of course viewed all these words in middlesize print).

In the analysis of recall as a function of word size, a main effect of word size was detected, $F(2,120) = 19.04$, $p < .01$. Post hoc comparisons using Tukey's method revealed that big words were recalled significantly better than small words which were in turn recalled better than middlesize words. However, a significant interaction between print type and word size also emerged, $F(4,120) = 7.41$, $p < .01$. Mean values are reported in Table 15. Inspection of these values reveals that word size recall dif-

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Insert Table 15 about here.

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ferences were most pronounced among intoned print subjects, were present but to a lesser extent among standard print subjects and disappeared among random subjects. Since the word size recall pattern was identical for standard and intoned groups, yet only the intoned Ss actually saw the differing word sizes, this suggests that the particular words happening to fall in these categories rather than the physical size of the words

Table 15
Mean Proportion of Words Recalled in the Sentence Recall Task as a Function of Word Print Size and Print Treatment Group[a]

		PRINT TREATMENT GROUP			
		Standard[c]	Intoned	Random	Mean[b]
Word Size	Big	0.65	.71	.60	.65
	Medium	.55	.57	.62	.58
	Small	.58	.64	.60	.61
	MEAN	.59	.64	.61	.61

[a] MS^W (120) = .0096

[b] $T\sqrt{MS^W}$ = .029 $p<.05$ for main effect of word size.

[c] Size values for Standard Print Group refer to recall of words printed in three sizes in the intoned version of the text not actually seen by Standard Print subjects.

accounted for the recall pattern observed. This is also suggested by the fact that size-based recall differences were not evident for the random print group who saw different words in the three sizes. Inspection of the grammatical form classes of the particular words falling in each of the three size categories on the intoned print sentences revealed that word types known to be more difficult to remember were disproportionately represented in the middlesize group. Clark (1966) among others has found that verbs are remembered less accurately than nouns in a sentence recall task. Of the 79 words in middlesize type, 46% were verbs, 33% nouns, and 16% adjectives. In contrast, of the 64 big words, nouns accounted for 61%, adjectives 27%, and verbs only 13%. Most of the little words (total of 137) were context dependent types, with prepositions, articles, auxiliaries, and pronouns accounting for 88%, and verbs accounting for 9%. Hence, the predominance of verbs very likely explains the poorer recall of middlesize words by both standard and intoned subjects.

In order to examine relationships among the various measures of reading behavior, Pearson product-moment correlations were calculated. Estimates of the reliability of the measures are presented in Table 16. All

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Insert Table 16 about here.

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but the prompted recall measure proved significantly reliable. Correlations between measures are reported in Table 17. In cases where there

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Insert Table 17 about here.

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was more than one measure of a reading behavior, scores for each subject were summed, and these sums were entered into the correlations.

As noted in the reporting of reliability values, measures of prompted recall on the two stories ("Stolen Bush" and "Mammoth") were not significantly correlated yet the sum of these scores correlated significantly with sentence recall. Inspection of the correlations of each of these stories separately revealed that recall scores on the "Mammoth" story accounted for the significant relationship between prompted story recall and sentence recall reported in Table 18. Whereas the correlations between "Stolen Bush" and sentence recall were .13 and .14 ($p > .05$), the correlations between "Mammoth" and sentence recall were .32 ($p < .05$) and .38 ($p < .01$). One reason for this might be that "Stolen Bush" was an easier story to read than "Mammoth."

As in the previous studies, recall measures were intercorrelated, and also speed measures were intercorrelated, but recall and speed were not significantly correlated indicating that they are independent aspects of reading ability. The Metropolitan reading achievement scores correlated significantly with the speed but not the recall measures indicating that despite its face validity as a measure of word and paragraph knowledge, this test appears to reflect how rapidly a child reads rather than how well he remembers what he reads. Contrary to the first experiment, silent

Table 16
Experiment 3: Intercorrelations Among Various Measures of the Same Dependent Variable — Indices of Reliability

Measure	Correlations	Significance
Oral reading speed — text	.92 to .96	**
Silent reading speed — text	.63 to .87	**
Prompted recall — text	.19	n.s.
Word recall — sentences	.72	**

**$p < .01$

Table 17
Experiment 3: Intercorrelations
Among Dependent Measures (N-63)

Measures	1 (Age)	2 (Gr)	3 (RL)	4 (ORS)	5 (Best)	6 (SRS)	7 (Rec)	8 (ORS)	9 (SRS)	10 (WRO)	11 (WRS)
1. Age	--	.63**	-.12	-.20	.26*	-.20	-.18	-.25	-.24	-.07	.01
2. Grade	.63**	--	.00	-.08	.10	-.06	-.18	-.21	-.17	.00	-.03
3. Reading Achievement Test	-.12	.00	--	.37**	-.22	.30*	.23	.22	.28*	.00	-.03
Text Reading Tasks											
4. Oral reading speed[a]	-.20	-.08	.37**	--	-.76**	.80**	.20	.84**	.68**	.04	.15
5. Best oral rereading speed	.26*	.10	-.22	-.76**	--	-.63**	.07	-.69**	-.57**	-.03	-.03
6. Silent reading speed[a]	-.20	-.06	.30*	.80**	-.63**	--	-.04	.60**	.69**	.03	.05
7. Prompted recall[a]	-.18	-.18	.23	.20	.07	-.04	--	.16	.03	.33*	.38**
Sentence Reading Tasks											
8. Oral reading speed	-.25	-.21	.22	.84**	-.69**	.60**	.16	--	.03	.33*	.38**
9. Silent reading speed	-.24	-.17	.28*	.68**	-.57**	.69**	.03	.79**	--	-.04	-.03
10. Word recall (oral reading)	-.07	.00	.00	.04	-.03	.03	.33*	-.12	-.04	--	.72**
11. Word recall (silent reading)	.01	-.03	-.03	.15	-.03	.05	.38**	.06	-.03	.72**	--

[a]These represent sums of at least two measures.

reading speed was significantly correlated with a number of the other measures, as many measures as oral reading speed. Perhaps subjects in E-3 and also E-2 where silent reading correlations were numerous possessed better control over silent reading processes than the younger readers tested in E-1.

Interestingly, measures of reading taken in the sentence reading/recall task proved to reflect the same processes as measures taken in the story reading tasks as indicated by the significant correlations between sister measures reported in Table 18. This was true for oral and silent reading speeds and for recall. It is perhaps especially surprising that Ss' ability to remember the words in single sentences read silently after a 12 second delay is positively correlated with their ability to remember details from an 8-page story read silently ($r = .38$, $p < .01$). This suggests that a general comprehension and/or memory process is common to both tasks. Since recall was measured in terms of word accuracy in the sentence task, it may be that memory for specific words is more central than memory for general ideas.

Also correlations among the miscue measures and correlations between these and the other measures of reading were calculated and are reported in Table 18. The speed with which children named colors in the task performed between reading and recall of sentences was also included. The correlations between text reading miscue scores and the sentence reading

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Insert Table 18 about here.

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measure were not significant. However, miscue scores did correlate negatively with reading speed, with faster readers producing fewer miscues. This relationship held even when the measures were taken in different tasks (i.e., reading speed in the sentence reading task and miscues in the story reading task). In other words, faster readers were more accurate and slower readers were less accurate. This picture is at variance with one suggesting a speed-accuracy tradeoff. To the extent that some readers are set for speed and others for accuracy, one would expect lower correlations between the two measures, with some slow but accurate readers and some fast but inaccurate readers. However, this was not the case.

It is interesting that a postive relationship between speed of color naming and speed of text reading was detected. This suggests that a basic pacing mechanism not limited to printed language but covering a variety of visual stimuli may be operating. Work of Spring (1976) indicates that children who are particularly slow in naming colors and digits tend to be poorer readers.

General Discussion and Conclusions

Three experiments were conducted to explore whether texts printed to convey information about intonation patterns might facilitate some aspect of reading performance in second, third or poor fourth grade readers. A variety of reading behaviors was examined. Attempts were made to reduce

Table 18
Experiment 3: Intercorrelations Among
Dependent Measures (N = 63)

Measures	12 (MIS-S)	13 (MIS-RE)	14 (MIS-SR)	15 (COLOR)
1. Age	.06	.10	.17	.04
2. Grade	.07	.16	.08	.23
3. Reading Ach. Test	-.16	-.19	-.16	.32*
Text Read. Tasks				
4. Oral speed	-.21	-.31*	-.05	.26*
5. Best oral reread speed	.27*	.24	.03	-.19
6. Silent speed	-.04	-.11	.04	.22
7. Prompted recall	-.10	-.32*	-.14	-.21
Sentence Read Task				
8. Oral speed	-.34**	-.36**	-.27*	.14
9. Silent speed	-.35**	-.34**	-.20	.14
10. Word recall (oral)	.09	.07	-.05	.08
11. Word recall (silent)	.13	-.13	-.04	.16
Other Measures				
12. Miscues (story reading)	-	.31*	.24	-.01
13. Fewest miscues - rereading story	.31*	-	.12	-.02
14. Miscues - sent. read	.24	.12	-	-.04
15. No. colors named	-.01	-.02	.04	-

the error variance by matching experimental and control subjects on reading ability and by using each subject as his own control. Also, a variety of beginning readers from lower class schools in Sacramento (E-1 and E-2) as well as middle class schools in Davis, California, (E-3) were tested. Some subjects were given explicit instruction and practice in the use of the printed cues while others were left to discover the utility of the cues. Despite these efforts, results failed to yield any consistent picture of facilitation as a consequence of printed intonation cues, contrary to preliminary positive findings reported by Ehri and Wilce (1974). The few differences which were statistically significant tended to be single isolated comparisons not repeated in analyses with other subjects. In conclusion, printed intonation patterns do not appear to aid children in their reading, and hence there is no justification for adding to publisher costs by implementing this system with children's books.

In terms of theoretical considerations, it was expected that printed intonation cues would prove useful because they would aid readers in the operation of integrating words into sentences. This was expected particularly among beginning readers who are thought to transform print to speech in order to make sense of printed material. Negative results of the present study may mean that this view of the reading process is wrong in one respect or another. It may be that speech is important only for recognizing unfamiliar printed words (i.e., decoding letters to sounds and attempting to find a match in the spoken lexicon), not for organizing words into sentences, and once children learn to recognize printed words automatically so that they do not have to decode them (LaBerge & Samuels, 1974), they cease depending upon speech at all in their reading. Related to this is the posssibility that, even in the comprehension of speech, intonation patterns may be relatively unimportant contributors to the process of synthesizing words into meaningful sentences. There is support for this in the fact that people acquiring English as a second language become able to comprehend speech long before they master its intonation patterns. In fact, some never do learn how intonation works. If this is the case, then there would be little reason to expect beginning readers struggling to organize printed words syntactically to gain much from this information either. Another possibility is that intonation cues fail to help because readers form expectations about syntactic patterns which extend over a number of words not yet seen and which are held for completion in the readers head when he comes to the words (Goodman, 1970; Smith, 1971; Rumelhart, in press). If this is the case, then expectations regarding the syntactic function and intonation values to be assigned to words are formed long before the words are seen. Hence, printed information built into words may merely serve to verify expectations, not to help create them.

In contrast to the above proposals, all of which imply that the positive findings reported by Ehri and Wilce (1974) occurred simply by chance, the alternative possibility is that tests of the hypothesis in the present study were in some way inadequate. The experiments may have lacked sufficient power (i.e., too few subjects were sampled given the size of the error variance). Or stories were not difficult enough to tax children's processing mechanisms. Or children were not given enough practice to discover the utility of the cues. (In defense, it

must be noted that the texts were very expensive to print, so this imposed a limitation on the number of stories available for practice.) Or the wrong populations of subjects were tested. For example, it might be that intonation cues would prove useful to more experienced or proficient readers. Cromer (1970) employed adult subjects and observed facilitation as a consequence of phrase boundary spacing cues. Although these possibilities cannot be denied, they are regarded as unlikely and not worth the cost of further pursuit experimentally.

A number of other relationships were observed in the present studies. Although reading mode was confounded with the section of the passage being read (i.e., first vs. final section), there was a tendency for silent reading to proceed more rapidly than oral reading among all groups of beginning readers. This is at variance with the notion that oral and silent speed tend to be equivalent among beginners. The fact that silent speed unlike oral speed correlated with very few other measures of reading among the younger subjects (second graders in Experiment One) suggests that beginning readers may simply lack control of silent reading processes. Those who proceed at rates faster than their oral speeds may not be adequately processing the printed text. In Experiments Two and Three employing somewhat more advanced readers (3rd and 4th graders), silent reading speed was observed to correlate with more other measures. This suggests that silent speed may be a valid indicator of underlying processing only among readers who have progressed beyond the beginning stages. In any event, results indicate that in comparisons of oral and silent reading speeds, uncertainty over whether the readers are in control of the underlying processes in both modes must be considered.

In the sentence reading/recall task employed in Experiments Two and Three, words printed in middlesize type were not recalled as well as words in large or small type. This pattern was evident with intoned print sentences but not with random print sentences. However, the pattern also occurred with standard print where word sizes did not vary. These results suggest that the particular types of words assigned to the middle size might have accounted for results. Inspection of the distribution of words of various grammatical form classes confirmed that verbs, known to be more difficult to recall, were disproportionately represented in the middlesize group. Nouns and function words dominated the big and little categories, respectively. Nouns are known to be more accurately remembered than verbs (Clark, 1966). Likewise, because functors are very predictable, they may also be reproduced somewhat more accurately.

Reliability values for most of the measures of reading behavior were high. The one exception was the comprehending measure suggested by Goodman (1973) as an index of in-process comprehension. Although having lower reliability, this measure was observed to correlate with prompted recall in Experiment One. These results contrast with Goodman's (1974) failure to observe such a relationship, and they suggest that the extent to which beginning readers insure that what they read is syntactically and semantically consistent with what has already been read is positively related to their prompted memory for the contents at the end of the story. Why free recall did not also correlate with the comprehending measure is not clear. However, free recall measures were correlated with fewer other

measures of reading than prompted recall measures in Experiments One and Two. Perhaps possession of effective retrieval strategies played a bigger role in determining how much of the story subjects spontaneously remembered than actual memory for the story.

The relationships between reading achievement scores on standardized tests of reading (i.e., WRAT or Slossen in Experiment One, California Test of Basic Skills in Experiment Two, and Metropolitan in Experiment Three) and measures of reading taken in the various experiments were examined. The highest correlations ($p < .01$) emerged between these test scores and measures of reading speed. In contrast, no significant correlations were observed between these tests and measures of free or prompted recall ($p < .05$). These results suggest that speed may be the most important capability in these tests and memory for meaning totally unimportant.

The most impressive measure of reading competence uncovered in the present study was the cloze measure employed in Experiment Two which correlated significantly with 11 out of 13 other measures. Apparently, a number of reading processes are important for successful cloze performance. As recognized by Guthrie (1973) among others, this appears to yield a powerful single index of a child's reading competence.

In Experiments Two and Three, two types of reading tasks were employed, story reading and single sentence reading and recall. Interestingly, measures of reading taken in the sentence task proved to reflect the same processes as measures taken in the story tasks. This was true for oral speed, miscues and recall in Experiment Two and for oral and silent reading speeds and recall in Experiment Three. It is perhaps especially surprising that subjects' ability to remember the words in single sentences read silently after a 12 second delay was positively correlated with their ability to remember details from an 8-page story read silently as occurred in Experiment Three. This suggests that a general comprehension and/or memory process may be common to both tasks. Also, results indicate that a good picture of a child's reading capabilities can be obtained by having him read and recall single sentences as well as paragraphs or stories.

The correlations between various measures of reading in the present study were intended to be suggestive rather than conclusive. Although not part of the central purpose of this study, these relationships were pursued because, in contrast to many studies of beginning readers, subjects here were tested individually and measures not obtainable with group-administered tests were employed, yielding a more complete picture of relationships among children's reading capabilities.

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Footnotes

[1]The assistance of Dr. Mary Koether and Dr. Ernst Rothkopf at Bell Laboratories, Murray Hill, New Jersey, is gratefully acknowledged. Their efforts made it possible to produce the experimental materials employed in these studies.

Appendix A
Analysis of Variance Tables for Experiment 1

Dependent Measure	Factors	Source	df	M.S.	F
Pretest:					
1. Word recognition	A	Grade	1	127.57	<1
	B	Blocks	8	539.60	
		Error	8	551.41	
	C	Condition	2	3.63	<1
	AC	G x C	2	9.41	<1
		Error	32	318.29	
2. WRAT scores	A	Grade	1	3.28	5.12
	B	Blocks	8	0.61	
		Error	8	0.64	
	C	Condition	2	0.02	<1
	AC	G x C	2	0.01	<1
		Error	32	0.05	
3. Miscues	A	Grade	1	20.66	<1
	B	Blocks	8	64.74	
		Error	8	205.79	
	C	Condition	2	47.81	<1
	AC	G x C	2	97.63	<1
		Error	32	175.90	
4. Comprehending	A	Grade	1	133.17	2.23
	B	Blocks	8	153.90	
		Error	8	59.61	
	C	Condition	2	69.23	<1
	AC	G x C	2	84.13	<1
		Error	32	210.48	
5. Free Recall	A	Grade	1	38.84	<1
	B	Blocks	8	89.38	
		Error	8	43.31	
	C	Condition	2	75.07	<1
	AC	G x C	2	57.42	<1
		Error	32	245.20	
6. Prompted Recall	A	Grade	1	96.00	<1
	B	Blocks	8	115.74	
		Error	8	100.33	
	C	Condition	2	40.18	<1
	AC	G x C	2	48.37	<1
		Error	32	205.38	
7. Speed	A	Grade	1	.593	<1
	B	Blocks	8	.437	
		Error	8	1.634	
	C	Condition	2	.105	<1
	AC	G x C	2	.003	<1

Appendix A Continued

Dependent Measure	Factors	Source	df	M.S.	F
7. Speed continued		Error	32	.681	
	D	Mode	1	.001	<1
	AD	G x M	1	.000	<1
		Error	16	.111	
	CD	C x M	2	.001	<1
	ACD	G x C x M	2	.039	<1
		Error	32	.126	
Training					
Speed (last treatment)	A	Grade	1	.150	<1
	B	Blocks	8	.490	
		Error	8	1.209	
	C	Condition	2	.799	1.35
	AC	G x C	2	.026	
		Error	32	.590	
	D	Mode	1	2.490	8.06*
	AD	G x M	1	.115	<1
		Error	16	.309	
	CD	C x M	2	.247	<1
	ACD	G x C x M	2	.025	<1
		Error	32	.395	
Posttest:					
1. Speed	A	Grade	1	1.232	<1
	B	Blocks	8	1.590	
		Error	8	2.905	
	C	Condition	2	1.539	<1
	AC	G x C	2	.038	<1
		Error	32	1.616	
	D	Mode	1	7.846	9.77**
	AD	G x M	1	.144	<1
		Error	16	.803	
	CD	C x M	2	.890	<1
	ACD	G x C x M	2	.123	<1
		Error	32	1.065	
	F	Print	2	.069	<1
	AF	G x P	2	.015	<1
		Error	32	.339	
	CF	C x P	4	.124	<1
	ACF	G x C x P	4	.037	<1
		Error	64	.186	
	DF	M x P	2	.157	<1
	ADF	G x M x P	2	.014	<1
		Error	32	.200	
	CDF	C x M x P	4	.097	<1
	ACDF	G x C x M x P	4	.091	<1
		Error	64	.198	

Appendix A Continued

Posttest:

Dependent Measure:			2. Free Recall		3. Prompted Recall		4. Miscue		5. Comprehending	
Factor	Source	df	M.S.	F	M.S.	F	M.S.	F	M.S.	F
A	Grade	1	25.21	<1	46.97	<1	22.74	<1	250.88	2.87
B	Blocks	8	168.80		180.26		202.58	<1	89.18	1.02
	Error	8	238.92		194.69		415.81		87.39	
C	Condition	2	206.24	<1	182.13	<1	37.94	<1	48.90	<1
AC	G x C	2	111.60	<1	13.93	<1	254.84	<1	421.28	1.27
	Error	32	487.24		482.46		458.02		330.55	
D	Print	2	1.26	<1	85.22	1.31	120.89	1.99	23.58	<1
AD	G x P	2	48.55	<1	14.13	<1	36.90	<1	19.47	<1
	Error	32	68.03		65.13		60.76		123.64	
CD	C x P	4	28.04	<1	53.96	<1	8.74	<1	7.64	<1
ACD	G x C x P	4	18.04	<1	91.34	<1	11.88	<1	126.97	<1
	Error	64	82.03		91.63		51.40		172.10	

Appendix B
Analysis of Variance Tables for Experiment 2

	Dependent Measure:		Oral Speed		Free Recall		Prompted Recall	
Factor	Source	df	M.S.	F	M.S.	F	M.S.	F
A	Blocks	9	.991		179.29		109.48	
B	Condition	1	.060	<1	31.68	<1	123.55	<1
	Error	9	.337		161.44		179.58	
C	Print	1	.008	<1	171.40	3.82	170.98	1.73
BC	C x P	1	.014	<1	116.28	2.59	17.56	<1
	Error	18	.464		44.91		98.89	

	Dependent Measure:		Miscues		Comprehending		Cloze	
Factor	Source	df	M.S.	F	M.S.	F	M.S.	F
A	Blocks	9	155.83		40.62		133.00	
B	Condition	1	517.68	3.00	1214.40	6.90*	80.66	<1
	Error	9	172.57		176.08		201.82	
C	Print	1	48.18	1.58	97.54	1.35	65.02	<1
BC	C x P	1	3.31	<1	8.28	<1	4.49	<1
	Error	18	30.52		72.22		72.42	

SENTENCE READING/RECALL TASK

	Dependent Measure:		Speed		Miscues		Comprehending	
Factor	Source	df	M.S.	F	M.S.	F	M.S.	F
A	Order	1	28.12	<1	265.22	143.4**	.042	1.29
B	Blocks	4	155.52		126.72		.027	
	Error	4	218.05		1.85		.033	
C	Condition	1	45.68	<1	378.22	2.50	.059	<1
AC	O x C	1	3.91	<1	70.22	<1	.077	<1
	Error	8	155.58		151.32		.083	
D	Print	1	38.34	2.52	5.62	<1	.031	<1
AD	O x P	1	4.29	<1	0.22	<1	.001	<1
	Error	8	15.21		17.72		.086	
CD	C x P	1	16.18	4.77	0.02	<1	.001	<1
ACD	O x C x P	1	3.83	1.13	1.22	<1	.009	<1
	Error	8	3.39		27.37		.085	

*$p<.05$
**$p<.01$

Appendix B Continued

Dependent Measure	Factor	Source	df	M.S.	F
Sentence Task: Word Recall	A	Order	1	0.0114	<1
	B	Blocks	4	.0049	
		Error	4	.0154	
	C	Condition	1	.1505	1.14
	AC	O x C	1	.4072	3.09
		Error	8	.1317	
	D	Word size	2	.0118	4.21*
	AD	O x W	2	.0020	
		Error	16	.0028	
	CD	C x W	2	.0067	1.22
	ACD	O x C x W	2	.0016	<1
		Error	16	.0055	
	F	Print	1	.0055	<1
	AF	O x P	1	.0055	<1
		Error	8	.0162	
	CF	C x P	1	.0025	<1
	ACF	O x C x P	1	.0000	<1
		Error	8	.0276	
	DF	W x P	2	.0068	1.05
	ADF	O x W x P	2	.0053	<1
		Error	16	.0065	
	CDF	C x W x P	2	.0087	1.93
	ACDF	O x C x W x P	2	.0032	<1
		Error	16	.0045	
Training: Speed	A	Blocks	9	1.214	
	B	Condition	1	0.037	<1
		Error	9	0.550	
	C	Mode	1	1.897	6.54*
	BC	C x M	1	0.163	<1
		Error	18	0.290	

*$p < .05$

Appendix C
Match-pair t-test Statistics for
Standard Print Minus Treatment Print
Comparison in Experiment 2

Dependent Measure	Intoned Ss t-value	Random Ss t-value
Free recall	-3.56**	-0.34
Prompted recall	-2.02	-0.80
Miscues	2.20	0.76
Comprehending	0.88	1.41
Cloze	-1.03	-0.87
Speed – text	0.25	1.77
Sentence – speed	1.995	3.12**
Sentence – miscues	1.14	0.64
Sentence – Comprehending	0.74	1.18
Sentence – word recall	0.94	1.11

**$p<.01$

Appendix D
Analysis of Variance Tables for Experiment 3

Dependent Measure	Factor	Source	df	M.S.	F
Oral reading speed (1st story)	A	Blocks	20	.4369	
	B	Condition	2	.2317	<1
		Error	40	.3250	
Reading speed (2nd story)	A	Blocks	20	2.6771	
	B	Condition	2	0.2251	<1
		Error	40	2.0393	
	C	Mode	1	28.2107	23.63*
	BC	C x M	2	0.3029	<1
		Error	60	1.1939	
Rereading speeds	A	Blocks	20	600.27	
	B	Condition	2	148.35	<1
		Error	40	392.42	
	C	Trials	4	1563.43	28.11*
	BC	C x T	8	25.62	<1
		Error	240	55.62	
Rereading – best time	A	Blocks	20	31.3115	
	B	Condition	2	4.3602	<1
		Error	40	51.1963	
Reading speed (3rd story)	A	Blocks	20	2.4581	
	B	Condition	2	0.6488	<1
		Error	40	1.9563	
	C	Mode	1	44.4170	32.16*
	BC	C x M	2	0.4164	<1
		Error	60	1.381	
Reading speed (4th story)	A	Blocks	20	1.9091	
	B	Condition	2	2.4211	1.35
		Error	40	1.7988	
Prompted recall (2nd story)	A	Blocks	20	5.1968	
	B	Condition	2	1.0159	<1
		Error	40	4.2992	
Prompted recall (4th story)	A	Blocks	20	49.0123	
	B	Condition	2	1.3611	
		Error	40	23.7236	
Sentence – speed	A	Blocks	20	.5929	
	B	Condition	2	.0583	<1
		Error	40	.4642	
	C	Mode	1	.4381	4.00
	BC	C x M	2	.3293	3.01
		Error	60	.1095	

Appendix D Continued

Dependent Measure	Factor	Source	df	M.S.	F
Proportion words recalled (total)	A	Blocks	20	0.0288	
	B	Condition	2	.0254	<1
		Error	40	.0555	
	C	Mode	1	.0793	5.66
	BC	C x M	2	.0349	2.49
		Error	60	.0140	
Proportion words recalled by size	A	Blocks	20	.0823	
	B	Condition	2	.0705	<1
		Error	40	.1641	
	C	Mode	1	.1948	4.54
	BC	C x M	2	.0851	1.98
		Error	60	.0429	
	D	Word size	2	.1828	19.04*
	BD	C x W	4	.0711	7.41*
		Error	120	.0096	
	CD	M x W	2	.0112	1.75
	BCD	C x M x W	4	.0035	<1
		Error	120	.0064	
Miscues - rereading	A	Blocks	20	114.77	
	B	Condition	2	73.49	1.35
		Error	40	54.35	
	C	Trials	4	97.04	3.00*
	BC	C x T	8	42.02	1.30
		Error	240	32.32	
Miscues - sentence recall	A	Blocks	20	42.47	
	B	Condition	3	90.05	2.14
		Error	40	42.15	

*$p < .05$

Appendix E
Bibliography of Stories Used

Byron H. Van Roekel and Mary Jean Kluwe, From Fins to Feathers, The Harper & Row Basic Reading Program, How to read in subject-matter areas. (2nd grade) "How the Cactus Helps Itself" pp. 60-61.

Marjorie Pratt and Mary Meighen, Story Time. California State Series published by California State Department of Education, Sacramento, 1961 (first and low to average second grade)
"Wait for William" pp. 66-76
"Who Was the King?" pp. 90-100

Lillian Moore and Lillian V. Mastrotto, Readers' Digest Reading Skill Builder, Part 1, 1958, Readers Digest Services Inc., Pleasantville, N.Y. 10570
"Grandma and the Skunks" pp. 10-13
"Pete Gets His Hat" pp. 17-19
"More Than a Horse" pp. 44-47
"Joe Keller's Farm" pp. 54-56
"The Big Man" pp. 63-66
"The Very Special Passenger" pp. 70-73
"Lost in the Mountains" pp. 73-81
"The Stolen Bush" pp. 90-94

Appendix F
Stories Used in Experiments

Joe Keller's Farm

Joe Keller has a farm. It is not like any farm you have ever seen. Have you ever seen a turkey that can run a toy train? Have you ever seen a rabbit that can drop money into a bank? Have you ever seen a raccoon that can play ball? You can see these animals on Joe Keller's farm.

Joe is an animal trainer. He has trained 28 different kinds of animals. He has trained them to do things no one ever thought animals could do. On his farm there is a sheep that does not seem to know it is a sheep. It goes where Joe Keller goes, just like a dog.

Joe has a pig that seems to have come right out of a story book. The pig walks over to some clothes. The clothes need to be washed, so the pig puts the clothes into a big wash basket.

"How much are three and three?" Joe asks one of his chickens. The chicken pecks six times. Does the chicken know that three and three are six? No, it is a trick. "It is the way I train them", says Joe. I give them their food in a special way. Slowly I train them to do what I want."

People ask him if he can train an animal to do anything. Joe Keller laughs. "No," he says, "I can not make a fish walk. I can not make a cow smile. And I can not make a cat sing like a bird."

How the Cactus Helps Itself (Brackets denote Cloze words)

Most plants need a [lot] of water so they [can] grow. But there is [a] kind of plant that [is] found in places where [it] is very hot and [dry]. This kind of plant [is] called cactus. Cactus lives [and] grows without needing much [water].

In these hot and [dry] places it does rain [sometimes]. When it rains, the [cactus] plant stores water inside [itself]. The water lasts for [a] long time because the [cactus] can grow and still [use] only a little water [each] day. It usually rains [before] all the water is [gone].

Animals eat many different [kinds] of plants. But most [of] them do not eat [cactus] because of the thorns [that] grow on the outside. [These] thorns would hurt an [animal's] mouth if he ate [the] cactus. This plant helps [itself] by having thorns and [by] being able to store [water] inside itself.

Lost in the Mountains

- 1 -

Don Parks was lost. He knew it now. And he was frightened. Where was his friend Jim? They had started out to hunt together. But Don had not seen Jim for hours. Now here was Don high in the mountains, all alone.

Where could Jim be? Don walked and walked. It was getting dark, and Don did not know where he was. Which way should he go?

Then Don saw a light. Don thought it must be an Indian campfire. Jim had said there were many Indian camps in these mountains.

- 2 -

Don was right. How happy he was to see those Indians sitting around their campfire! The Indians were very kind. They gave Don food to eat and water to drink. Don told them how he had lost his way and his friend.

"What is your friend's name?" one Indian asked him.

"His name is Jim," Don told him.

"Fire your gun three times," said the Indian. Don fired three shots. Then the Indian put his hands up to his mouth and called "Jim-eeeeeee!"

- 3 -

Soon Don heard the same call--way off. "Jim-eeeeeee!" The call had been picked up by another Indian camp. Then Don heard it again, way, way off. "Jim-eeeeeee!" Still another Indian camp had picked up the call. Then everything was quiet.

All at once Don heard three shots--way, way off. He heard his name --"Don-eeeeeee!" Then he heard it again, but this time it was closer. "Don-eeeeeee!" Each Indian camp picked up the call and passed it on to the next camp.

- 4 -

Then the Indian said to Don, "Now all the Indians in the mountains know where you are. And they know you are looking for your friend. They will show him the way." And one hour later there was Jim!

Grandma and the Skunks (Brackets denote Cloze words)

Grandma Hall lives in [the] country. Her little house [is] not far from th[e] [woods]. One day Grandma Hall [was] sitting in her kitchen. [She] was eating her lunch. [It] was a warm day, [and] her back door was [open] to let in fresh [air].

All at once Grandma [heard] something. Thump! Thump! She [looked] up. There in the [doorway] was a skunk! Grandma [and] the skunk looked at [each] other for a minute. "[Oh]" thought Grandma. "What if [he] lifts his tail and...!" [But] the skunk just stood [there]. His black eyes were [bright]. His nose moved as [he] took in the good [smell] of food.

"He looks [as] if he is waiting [for] me to ask him [in]," she thought. She took [a] dish of milk and [put] it on the table. [Then] she pulled out a [chair]. "Please come in," said [Grandma] to the skunk. "Please [come] in and sit down." [To] her surprise, the skunk [came] into the room. He [looked] at Grandma and at [the] milk on the table. [Then] he jumped on the [chair]. Grandma sat very still. [She] did not want to [frighten] the skunk. But the [skunk] was very much at [home]. He drank the milk. [Then] he jumped down and [ran] off into the woods.

[Grandma] Hall did not think [she] would see that skunk [again]. But the very next [day] she heard a thump [at] the back door. There [in] the doorway was her [friend] the skunk. But this [time] he was not alone. [Mrs.] Skunk was with him. [So] were six baby skunks! "[Do] come in," Grandma said [once] more. "Do come in, [Mr.] and Mrs. Skunk. And [bring] your children."

First came [Papa] Skunk. Then came Mama [Skunk]. Then, one by one, [in] came all six of [the] little skunks. Grandma gave [them] all some milk to [drink]. After they had their [milk] out they went--Papa [Skunk], Mama Skunk, and the [six] little baby skunks. Grandma [Hall] never saw any of [that] nice skunk family again.

[When] she thinks about them [now] Grandma says, "Do not [believe] all the bad things [people] say about anyone--even [skunks]."

More Than a Horse

- 1 -

Doctor Pete was a young country doctor. Charlie was his horse. In those days there were not many cars on the roads. A doctor needed a strong buggy and a good horse because he had to drive to the homes of sick people.

Charlie was more than a good horse. He was a good friend. He would do anything for Doctor Pete. He knew that Doctor Pete loved him very much too. When Charlie was born, he was a sick little horse. The horse doctor said he would not live.

- 2 -

But Doctor Pete took good care of the little animal, and Charlie grew to be a fine strong horse. After that, Charlie went everywhere with Doctor Pete. For years they went up and down those country roads together. What good friends the man and the horse were! How well they understood each other!

One night Charlie and Doctor Pete drove out to see a very sick little boy. They drove far out into the country. Doctor Pete stayed with the boy almost all night. When the boy was feeling better, Doctor Pete went out to his buggy. He climbed in and said, "Take me home, Charlie. I am very tired."

- 3 -

Soon Doctor Pete was fast asleep in the buggy.

That country road was full of grass and weeds. There were many holes, too. Bump, bump, bump, went Charlie and the buggy along the road. Then Charlie stopped. He knew something was wrong. He looked back at the buggy. Doctor Pete was not there!

Charlie turned around. Slowly he went back along the road. He kept looking around. He seemed to be asking, "Doctor Pete, where in the world are you?" Then he stopped. There was Doctor Pete, fast asleep in the grass!

Charlie walked up beside the doctor. He made noises. He stamped his feet. At last Doctor Pete woke up. He climbed back into the buggy. "Thanks, Charlie," he told his friend. "Let's go home now. And this time I will try to stay in the buggy."

The Stolen Bush

- 1 -

Mr. Gray thought no one was looking. He stopped his car and got out. He looked at the beautiful bushes along the road. One had many big red flowers. That's the bush Mr. Gray wanted. He thought it would look just right in his garden at home.

He looked around again to see if anyone was watching. Then he opened the trunk of his car and took out a shovel. Mr. Gray began to dig up the bush with the big red flowers. It was hard work, but at last he got the bush out of the ground.

- 2 -

He looked at the bush and smiled. "What a beauty!" he said out loud.

"Yes, isn't it?" said someone behind him. Mr. Gray turned around. There on his horse sat a man in a green suit and a big hat. It was a Park Ranger!

Mr. Gray put down the bush. He was frightened. He knew he had been stealing. The Ranger was the policeman of the forest. What would the Ranger do to him?

"You know this is a National Park, don't you?" the Ranger said quietly.

Mr. Gray nodded.

- 3 -

"That means this land, this forest, everything here belongs to all of us," said the Ranger. "Isn't that so?"

Still frightened, Mr. Gray nodded again.

"That's a beautiful bush," the Ranger went on in his quiet voice. "Many people come from far away to see this forest. Many people would like to see that beautiful bush." The Ranger got down off his horse. "Come with me," he said, and he walked across the road. "Don't you think that bush would look good planted here in this spot?" said the Ranger.

- 4 -

Mr. Gray nodded.

"Well then," said the Ranger. "Plant it here. Plant it here right now." And he sat down.

Mr. Gray got his shovel and began to dig. The ground was hard and dry. He had to dig and dig and dig. He had never worked so hard. The Ranger did not say a word. He just sat there. Mr. Gray was so tired he wanted to stop but he kept on digging. At last he had a deep hole.

- 5 -

The Ranger stood up. "Now we need some water," he said. "Do you have something you can carry water in?" Mr. Gray went to his car and found a small pail he could use. "There's a stream down there where you can get some water," said the Ranger, pointing down a hill.

Down the hill and up the hill walked tired Mr. Gray. He had to go to the stream many times before he had enough water for the bush. By the time he was done, Mr. Gray was so tired he could hardly move. At last the bush was in the hole. At last there was enough water so the bush would grow again.

- 6 -

The Ranger waited until Mr. Gray got in his car. Then Mr. Gray and the Ranger looked at each other. "It's hard work to plant a bush, isn't it?" the Ranger said quietly. Mr. Gray looked down. Then he drove away in his car. The Ranger smiled to himself. He was sure that Mr. Gray would never steal another bush.

Pete Gets His Hat

- 1 -

Every Saturday morning, there is a line of boys and girls on Garden Street. They are waiting to see a movie. The movie never starts before ten o'clock. But the boys and girls can not wait. They start getting in

line before ten o'clock.

One Saturday morning there was a good cowboy movie. Pete Parker came running down the street. He wanted to be one of the first to get inside and see the movie. Pete took one look at the line of boys and girls. What a long line it was! He was not going to go to the end of that line. No sir. Pete walked up the front of the line and pushed his way in there.

- 2 -

Pete had pushed his way right in front of Andy Wilson. This made Andy mad but he did not say a word. This is what he did. He reached up and pulled off Pete's hat. Andy handed the hat to the boy behind him. "Pass it," said Andy. Joe passed the hat to the girl behind him. "Pass it, Kate," said Joe. Kate turned around and passed the hat back. "Pass it," she said. Pete's hat went down the line until it got to Betty Cook at the very end.

- 3 -

Pete turned around to Andy. "Where's my hat?" he wanted to know. Andy pointed down the line. "It went that-a-way," he said. Pete looked back down the long line. There at the end of the line was Betty holding up Pete's hat. Everyone smiled. But not Pete. He did not say another word. He walked all the way back to Betty Cook. "Here's your hat," she said sweetly.

Pete still goes to the movies on Saturday mornings. But now he goes to the end of the line and waits his turn to buy his ticket.

<u>The Big Man</u> (Brackets denote Cloze words)

- 1 -

This story happened a [long] time ago. It happened [one] summer to a girl [named] Nina. That summer Nina [and] her mother were living [on] a farm. Nina did [not] like the children who [lived] down the road. But [her] mother said that Nina [had] to play with them. [Nina] was very angry. "I [will] not play with them!" [she] said to herself. "I [will] run away. That's what [I'll] do!" Nina put some [bread] and butter in a [bag]. Then off she went [down] the road.

- 2 -

She walked [and] walked. How long the [road] seemed to be! Soon [she] heard a horse and [buggy] coming down the road [behind] her. A man was [driving] the buggy. Nina knew [him]. He lived near Nina's [farm]. She did not know [his] name so she called [him] the Big Man!

"Hello, [Nina]," said the Big Man. "[Where] are you going this [hot] morning?"

"I am running [away]," Nina said, looking very [angry].

"It's hot," said the [Big] Man. "I am going [fishing] now. Why don't you [come] fishing with me? You [can] run away later."

- 3 -

Nina [was] hot. Maybe fishing would [be] fun. She got into [the] buggy. "Fishing gives you [time] to think things over," [said] the Big

Man. He [showed] Nina how to fish. "[We] don't talk when we [are] fishing," he told her. "[The] fish can hear!" So [the] two of them sat [quietly] and fished. Nina liked [the] quiet. She ate her [bread] and butter. Then she [fished] some more. She caught [one] little fish and one [big] fat one. What a [good] time she was having!

- 4 -

[Soon] she did not feel [angry] any more. And she [could] not wait to show [her] mother the fish she [had] caught. At the end [of] the day they climbed [into] the buggy. The Big [Man] drove Nina up to [her] gate and then he [drove] away.

The Very Special Passenger

The big bus pulled over to the bus stop. Mr. Cook got on the bus. He looked around and laughed. "I see there is a seat for me today," he said to the bus driver. The driver laughed too. Mr. Cook was the only passenger on the bus.

"We will have another passenger soon," the driver said. "We will pick him up at West Street."

"How do you know?" asked Mr. Cook.

"Oh, I pick him up at West Street almost every day," the driver said with a smile. "He is a very special passenger."

"Is that so?" said Mr. Cook. "What is so special about him?"

"He does not have to pay to ride in my bus," the driver told him.

"That is special!" Mr. Cook said in surprise. "Why is that?"

"He saved a little girl who fell in the river," said the driver. "The little girl's father is a bus driver. So now he is a very special passenger to all the bus drivers. They give him free rides because he is their friend."

"Do you stop for him whenever you see him?" asked Mr. Cook.

"No," said the driver, "if he wants to ride he stands at a bus stop like anyone else. When he gets on he goes right to his seat in the back."

Mr. Cook was surprised. "Doesn't he like to sit and talk to you?"

The driver shook his head. "He isn't much of a talker!" he said.

The bus turned into West Street. "There he is!" said the bus driver. Mr. Cook looked around. He did not see anyone at the bus stop.

The bus stopped. The door opened. Into the bus came a big brown dog. The dog walked right to the back of the bus. He got right down on the back seat. "There he is!" said the bus driver, laughing. "He is my very special passenger."

Wait for William

- 1 -

Little William lived in a big house on High Street. He lived with his mother and his older brothers, Bob and Dick. One day the boys were very happy. They were going to Main Street to see the circus parade. The circus parades always went down Main Street. Away went the three boys to see the parade.

Bob said, "Walk faster. We don't want to miss seeing the animals. We want to see the elephants." Bob walked faster and faster. Dick walked

faster and faster.

- 2 -

Little William had to run to keep up with them.

"Oh," said Dick, "I hear the band. Run faster." Dick began to run. Bob began to run. William could not run that fast. Then one of William's shoes came off. He stopped to put it on. Bob and Dick did not stop. After his shoe was on, William looked down the street. He could not see his brothers. Little William began to cry. "I will not get to see the elephants," he said. "I will not get to see the parade."

- 3 -

All at once little William heard a band playing. He looked down the street. He saw the circus parade. The circus parade was coming down his street! William jumped up and down. "I will get to see the parade here," he said. "I do not have to go to Main Street to see the parade."

The parade came down the street. William looked. A man on a big horse went by. The circus band went by. A girl riding on a beautiful horse went by. Some big elephants went by. A man was walking beside the biggest elephant.

- 4 -

William looked at the big elephants. He looked at the man walking beside the biggest elephant. William called out, "Hi, Mr. Elephant Man." The man heard William calling. He looked at William and he said, "Do you want to ride in the parade?"

"Yes! Yes!" called William. William ran to the man. The man stopped the big elephant. He helped William get on the big elephant. Away went William riding on the biggest elephant in the parade. On went the parade down High Street.

Then the parade turned onto Main Street.

- 5 -

On went William and the big elephant down Main Street. William looked around for Bob and Dick. He saw them with some other boys. "Hi, Bob! Hi, Dick! Hi, boys!" he called. His brothers looked up. All of the boys looked up.

"Look at William on the elephant," they called. The boys were so surprised.

At last the parade was over. Mr. Elephant Man helped William get off the elephant.

"Thank you, Mr. Elephant Man," said William. William looked up at the big elephant. "Thank you, Big Elephant," he said. "Thank you for a ride in the parade."

Growing Oranges

- 1 -

There are many different types of farms in the United States. Some farmers use modern machinery to grow and harvest their crops and some work in the old way. Some grow one crop, some another. No two farms are exactly alike. Yet all these farmers really have much in common. They all are concerned about the weather. They all are interested in selling their crops.

- 2 -

One especially interesting type of farm is found in Florida and California. It grows oranges. A field of orange trees is a busy place at many times of the year. Tractors are driven back and forth between the rows to turn over the dirt and keep the grass from growing beneath the trees. Men climb up on ladders to prune the trees. They cut off many of the extra branches so that the oranges can get more sunlight and grow bigger. They then get rid of the branches by burning them. The ground is fed a carefully measured amount of fertilizer to feed the trees so that they will produce lots of oranges.

- 3 -

The battle against insects is never over. These insects are not wanted because they nibble on the new leaves and buds. Usually, spraying the trees with insecticide to kill the insects is not enough. Many trees are fumigated. When this is done, a very big tent is placed over an entire tree. Then, a special gas is released under the tent, killing the insects. Many growers buy thousands of ladybugs to release in their trees. Ladybugs are beetles that are not harmful to trees but eat other insects that are.

- 4 -

Besides insects, there is something else that is bad for orange trees: low temperatures. Sometimes in the winter it can get so cold around orange growing lands that frost threatens to kill the new orange buds on the trees. Advance warning of frost is usually given by the weather bureau. Many growers also have automatic alarmas, which ring even in the middle of the night if the temperature drops too low. During the winter, some farmers keep small stoves standing in the groves. On a night when frost is expected. these stoves are lighted. Usually, they can warm the air enough to save the crop. Farmers hate frost almost as much as they hate insects.

- 5 -

When the oranges get ripe and must be picked, more workers come to the grove than at any other time. As the men gather the golden fruit, truckload after truckload of oranges moves toward town or to the city to be sold. Sometimes the fruit may be carried in large trucks or refrigerated freight cars to markets thousands of miles away to places where oranges cannot be grown.

Ways of the Weather (The Mammoth)

- 1 -

Scientists know that weather conditions on the earth have not always been the same. There have been very warm periods, wet periods, dry periods, and some in between. Though these changes usually take a long time to come about, this has not always been true.

- 2 -

In the year 1900, while hunting in northern Asia, a Russian stumbled over the body of a huge animal. The creature was frozen in the ice with only its head sticking out. The animal was far too big for the man to dig

out or move himself. Instead, he axed off the tusks and took them to the nearest trading post to sell.

- 3 -

The manager there bought the tusks and then asked about the rest of the beast. From what the hunter told him, the man recognized it as a mammoth, a kind of elephant that had died out about 10,000 years ago. According to Russian law, all mammoth and other frozen animal discoveries were to be reported to the government. The hunter did this, and a group of scientists was sent to the spot.

- 4 -

The men put up a wooden building around the body. Then they lighted fires to thaw out the beast. Finally they packed up the parts, refroze them in the cold air, and shipped them by sled to the railroad station. Later the animal would be mounted in a Russian museum. Though mammoths had been found before, this was a most unusual discovery. The scientists knew that they had a real mystery on their hands.

- 5 -

When this mammoth was found, it was sitting on its back legs. One of its front legs was raised. Except for parts of the head, which had been eaten by wolves, the animal was perfectly preserved. It was so fresh that the meat could even be eaten — if anyone cared to eat "elephant" meat. Most amazing of all, there were buttercups on its tongue!

- 6 -

These clues led the scientists to believe that when the animal lived, this part of northern Asia had been warm. Today it is a land of everlasting ice and snow. In fact the coldest temperatures in the world have been recorded near this area!

- 7 -

Just before the mammoth died it had been feeding on grass and flowers in the warm sunshine. Then, in a matter of seconds, the temperature dropped. Suddenly the animal was frozen. It happened so fast that the mammoth had not had a chance to swallow its meal! Not one part of the animal even began to decay! From that time on northern Asia has been a frozen land.

- 8 -

It has been suggested that to quick freeze a mammoth, the temperature would have to drop almost at once to more than one hundred fifty degrees below zero. What force could have caused such a sudden and complete change in the weather? Could such a thing ever happen again in some part of the world? Scientists have many ideas about it, but they cannot be sure of any of them. It remains an unsolved mystery.

Appendix G
Word Recognition Lists

Joe Keller's Farm

Joe Keller	turkey	rabbit	money	raccoon	animal
trainer	different	thought	sheep	clothes	basket
chicken	pecks	trick	special	laugh	smile

How the Cactus Helps Itself

plant	cactus	store	mouth	thorn	usually

Lost in the Mountains

Don Parks	lost	frightened	friend	Jim	hunt
hour	mountains	dark	light	thought	Indian
campfire	fire	shots	mouth	heard	Jim-eeeeee
quiet	closer	passed	later	Don-eeeeee	

Grandma and the Skunks

woods	fresh	kitchen	skunk	Grandma	thought
doorway	lunch	believe	country	minute	frightened

More Than a Horse

Doctor Pete	young	country	Charlie	horse	needed
buggy	drive	homes	sick	care	understood
climbed	grass	weeds	bump	wrong	turned
around	noises	stamped			

The Stolen Bush

beautiful	garden	bush	pointing	forest	thought
stream	frightened	stealing	hardly	Park Ranger	trunk
shovel	quietly	National	beauty		

Pete Gets His Hat

Saturday	garden	waiting	movie	cowboy	ten o'clock
Pete Parker	inside	front	push	Andy Wilson	reached
pass	behind	Kate	until	Betty Cook	pointed
holding	smiled	sweetly	buy	ticket	

The Big Man

happened	Nina	angry	bread	butter	road
seemed	buggy	quiet	caught	climbed	

The Very Special Passenger

cook	laughed	seat	driver	passenger	west
smile	special	surprised	saved	river	father
friend	whenever	else	isn't		

Wait for William

William	circus	parade	animal	elephant	band
beautiful	beside	biggest	riding	surprised	high
brother	main	miss	faster	began	

Appendix H
Prompted Recall Questions and Answers for Stories

Joe Keller's Farm (E1)

QUESTIONS	ANSWERS
1. What kind of place is this story about?	-a farm -Joe Keller's farm
2. Whose farm is it?	-Joe's -Joe Keller's
3. What is different about Joe Keller's farm?	-the animals -what the animals do
4. What are some of the animals on Joe Keller's farm?	-rabbit -turkey -raccoon -sheep -pig -chicken
5. What can the animals do?	-run a toy train -drop money into a bank -play ball -follow Joe Keller like a dog -put clothes into a wash basket -add three and three; answer questions
6. What does the turkey do?	-run a toy train
7. What can the rabbit do?	-drop money into a bank
8. What can the raccoon do?	-play ball
9. Who taught these animals to do the different things they do?	-Joe -Joe Keller
10. How many different kinds of animals has Joe Keller trained?	-28
11. There is an animal that follows Joe like a dog but is not a dog. What is it?	-sheep
12. Which animal seems like a story book animal?	-pig
13. What does it do?	-walks over to some clothes that need to be washed -puts the clothes into a big wash basket
14. Which animal can give the correct answer to the question, "How much are 3 and 3?"	-chicken
15. Can the chicken (this animal) really add?	-no

Appendix H Continued

16. How does Joe Keller train (teach) his animals?	-gives them their food in a special way -slowly he trains them to do what he wants
17. Can he train an animal to do anything	-no
18. Joe says, "I can not make a fish _____." What can't he make a fish do?	-walk
19. Joe says, "I can not make a cow _____." What can't he make a cow do?	-smile
20. Joe says, "I can not make a cat sing like a _____." Joe can't make a cat sing like a _____, what?	-bird

How the Cactus Helps Itself (E1,2)

1. In what kinds of places do cactus grow? (If "deserts", then ask: What kinds of places are deserts?)	-hot and dry places -deserts
2. Do cactus need a lot of water to grow?	-no
3. Why can the cactus grow where there is not much water?	-Cactus lives and grows without needing much water -it stores water inside of itself
4. What does the cactus do when it rains?	-stores water inside itself
5. Why does the water last for a long time?	-cactus lives and grows without needing much water
6. Do animals eat cactus?	-no
7. Why don't animals eat cactus?	-thorns -would hurt its mouth
8. What would happen to an animal if he ate cactus?	-would hurt its mouth
9. What are two ways in which the cactus helps itself?	-by having thorns -by being able to store water inside itself

Appendix H Continued

Lost in the Mountains (E1,2)

1.	Who was the story about?	-Don Parks -Jim -Indians
2.	Why was Don Parks frightened at the beginning of the story?	-he was lost
3.	Who was his missing friend?	-Jim
4.	What had Don and his friend Jim been doing?	-hunting
5.	Where was Don now?	-high in the mountains -all alone
6.	What time of day was it?	-night -it was getting dark
7.	Then what happened? What did Don see?	-Don saw a light -saw an Indian campfire
8.	(If light) What did Don think it was?	-an Indian campfire
9.	Why did Don think it was an Indian campfire?	-Jim had said there were many Indian camps in these mountains
10.	Was he right?	-yes
11.	What did the Indians give Don?	-food to eat and -water to drink
12.	What did Don tell the Indians?	-how he had lost his way and his friend
13.	What did one Indian ask Don?	-his friend's name
14.	What did the Indian tell Don to do?	-fire his gun three times
15.	What did the Indian do?	-put his hands up to his mouth and called Jim-eeeeee
16.	What did Don hear?	-the same call way off
17.	Who picked up the call?	-another Indian camp
18.	Then it was quiet. Then what did Don hear?	-three shots way, way off -his name, Don-eeeeee
19.	What did the Indian say?	-all the Indians know where you are -they know you are looking for your friend -they will show him the way
20.	How did the story end?	-Jim came to Don

Appendix H Continued

21. How long did it take Jim to get to Don?	-one hour

Grandma and the Skunks (E1)

1. Where does Grandma Hall live?	-in the country -near the woods
2. What was she doing when she heard something?	-eating her lunch
3. What was the noise she heard?	-a thump -a skunk
4. What did she see in the doorway?	-a skunk
5. Why had the skunk come?	-the good smell of food
6. What was Grandma afraid the skunk might do?	-lift his tail
7. What did Grandma do? (What did she feed the skunk?) (Where did she put the dish of milk?)	-said "Please come in." -put a dish of milk on the table
8. What did the skunk do? 9. Then?	-came into the room -looked at Grandma and the milk -jumped on the chair -drank the milk -jumped down -ran off into the woods
10. Did Grandma think she would see that skunk again?	-no
11. Did she see him again?	-yes
12. Was he alone?	-no
13. Who was with him?	-Mama Skunk and six baby skunks
14. What did Grandma do?	-said "do come in." -gave them all some milk
15. What did the skunks do?	-came in -drank their milk -left
16. What does Grandma say when she thinks about the skunks now?	-"do not believe all the bad things people say about anyone--even skunks."

More Than a Horse (E1,2)

1. Who is the story about?	-Dr. Pete -Charlie
2. Where did Dr. Pete live?	-in the country

Appendix H Continued

3.	Charlie was more than a horse to Dr. Pete. What else was he?	-a good friend
4.	When this story took place, why did a doctor need a strong buggy and a good horse?	-because he had to drive to the homes of sick people
5.	What did the horse doctor say about Charlie when he was born?	-he would not live
6.	What did Dr. Pete do?	-he took good care of Charlie
7.	What kind of horse did Charlie grow to be?	-a fine strong horse
8.	Where did Charlie go with Dr. Pete?	-everywhere
9.	Where did Dr. Pete and Charlie go on the night in the story?	-to see a very sick little boy -far out into the country
10.	How long did Dr. Pete stay with the sick boy?	-almost all night
11.	What did Dr. Pete say to Charlie when he was ready to go home?	-"Take me home, Charlie. I am very tired."
12.	What did Dr. Pete do after he climbed into the buggy?	-fell fast asleep
13.	Why was the road so bumpy?	-it was full of grass and weeds -there were many holes too
14.	Why did Charlie stop?	-he knew something was wrong
15.	What had happened?	-Dr. Pete was not there -Dr. Pete had been bumped right out of the buggy
16.	What did Charlie do?	-turned around -slowly went back along the road -found Dr. Pete -made noises -stamped his feet
17.	Where was Dr. Pete?	-fast asleep in the grass
18.	What did Charlie do?	-made noises -stamped his feet

The Stolen Bush (E1,2)

Appendix H Continued

1.	Why did Mr. Gray stop his car and get out (at the beginning of the story)?	-he looked at the beautiful bushes -he thought one would look just right in his garden at home
2.	Why did he look around to see if anyone was watching	-because he wanted to take the bush -he didn't want anyone to see him take the bush
3.	What did he take out of the trunk of his car?	-shovel
4.	What did he do then?	-dug up the bush
5.	Who caught him?	-the Park Ranger
6.	Why was Mr. Gray afraid?	-he knew he had been stealing -the Ranger was the policeman of the forest
7.	Who does the National Park belong to?	-everyone
8.	What did the Ranger make Mr. Gray do? (In the same place?)	-plant the bush again in a new place
9.	Why was Mr. Gray so tired?	-it was hard to dig a hole for the bush -he had to make many trips to the stream to get water for the bush
10.	Why was it so hard to dig?	-the ground was hard and dry
11.	Where did Mr. Gray get the water for the bush?	-from a stream
12.	Why did the Ranger smile after Mr. Gray drove away?	-he was sure that Mr. Gray would never steal another bush

Pete Gets His Hat (E1,2)

1.	What do the boys and girls in this story do on Saturday morning?	-go to the movies
2.	Why is there a line of boys and girls on Garden Street every Saturday morning?	-they are waiting to see a movie
3.	When does the movie begin?	-ten o'clock
4.	On the morning of this story, what kind of movie was being shown?	-cowboy

Appendix H Continued

5.	What did Pete Parker do when he saw the long line of children?	-walked up to the front of the line -pushed his way in there
6.	Who did he push his way in front of?	-Andy Wilson
7.	What did Andy feel?	-mad
8.	What did Andy say?	-nothing
9.	What did Andy do?	-reached up and pulled off Pete's hat
10.	What did Andy do with Pete's hat?	-handed the hat to the boy behind him and said, "Pass it."
11.	What happened to Pete's hat?	-the children passed it back to the end of the line
12.	Where did Pete's hat end up?	-at the end of the line -with Betty Cook
13.	When Pete turned around to Andy, what did Pete say?	-"Where's my hat?"
14.	What did Andy say?	-"It went that-a-way."
15.	What did everyone do?	-smile
16.	What did Pete do?	-walked all the way back to the end of the line -to Betty Cook
17.	Does Pete still go to the movies on Saturday morning?	-yes
18.	What does Pete do on Saturday mornings when he goes to the movies?	-goes to the end of the line and waits his turn to buy his ticket

The Big Man (E1)

1.	When did this story happen	-a long time ago
2.	Who did it happen to?	-a girl named Nina
3.	Where were Nina and her mother living that summer?	-on a farm
4.	Why was Nina angry with her mother?	-her mother said she had to play with some children that she did not like
5.	What did her mother want her to do?	-to play with some children that she did not like

Appendix H Continued

6.	What did Nina decide to do?	-to run away
7.	What did Nina take with her?	-some bread and butter in a bag
8.	Where did she go?	-off down the road
9.	What did she hear coming down the road behind her?	-a buggy
10.	Who was driving the buggy?	-a man -The Big Man
11.	Did Nina know him?	-yes
12.	Did Nina know his name?	-no
13.	What did Nina call him?	-the Big Man
14.	Where was the Big Man going?	-fishing
15.	What did he ask Nina?	-to go fishing with him
16.	What did Nina decide to do?	-to go fishing with him
17.	What did the Big Man tell Nina about fishing?	-fishing gives you time to think things over -we don't talk when we're fishing; the fish can hear
18.	What did Nina do?	-fished -ate her bread and butter
19.	How many fish did she catch?	-two
20.	Was she still angry?	-no
21.	What did she want to do with the fish she caught?	-to show them to her mother
22.	What did Nina do at the end of the day?	-climbed into the buggy -went home
23.	How did Nina get home?	-the Big Man drove her home

The Very Special Passenger (E1,2)

1.	Why did Mr. Cook laugh when he got on the bus?	-he was the only passenger on the bus
2.	What did the bus driver say?	-we will have another passenger soon

Appendix H Continued

3.	Where did the driver say they would pick up another passenger?	-West Street
4.	How or Why did the bus driver know there would be a passenger to pick up?	-because the bus driver picks him up almost everyday
5.	What is so special about the very special passenger?	-he does not have to pay to ride the bus
6.	Why doesn't the special passenger have to pay to ride the bus?	-because he saved a little girl who fell in the river -the little girl's father is a bus driver
7.	If the special passenger wants a ride, what does he do?	-stands at a bus stop like anyone else
8.	What does the special passenger do when he gets on the bus?	-goes right to his seat in the back
9.	Where does the special passenger sit?	-in the back of the bus
10.	Is the special passenger very talkative?	-no
11.	Who is the very special passenger?	- big brown dog

Wait for William (E2)

1.	Who was the story about?	-Little William
2.	Who did Little William live with?	-his mother -his older brothers Bob and Dick
3.	On the day of the story, why were the boys very happy?	-they were going to see the circus parade
4.	What street did the circus parade always go down?	-Main
5.	On the way to the parade, Bob and Dick walked faster and faster. What did William have to do to keep up with them?	-run
6.	Why did Little William stop?	-his shoe came off
7.	Did his brothers stop?	-no

Appendix H Continued

8. What did William do?	-put his shoe back on
9. After he put on his shoe, he looked up but he could not see his brothers. What did he do?	-he began to cry
10. Why did William cry?	-he would not see the animals
11. What did William hear?	-a band playing
12. What did William see?	-the circus parade
13. What things passed William?	-a big horse -circus band -girl on a beautiful horse -elephants
14. Who did William call out to?	-the man walking beside the biggest elephant
15. What did the Elephant Man ask William?	-if he wanted to ride in the parade
16. What did William say (decide to do)?	-Yes -(to ride the elephant)
17. Who did William see on Main Street?	-his brothers, Bob and Dick -some other boys
18. Why were the boys so surprised?	-to see William on an elephant

Pete Gets His Hat (E3)

page 1

1. Why do the children line up on Garden Street?	-they are waiting to see a movie
2. What did Pete say and do when he saw the line of children?	-I will not go to the end of the line -No sir. -he walked up to the front of the line -pushed his way in there

page 2

3. What did Andy do to Pete when Pete pushed in front of him?	-he got mad -he did not say a word -he reached up and pulled off Pete's hat -handed the hat to the boy behind him -and said, "Pass it."
4. What happened to Pete's hat?	-the children passed it back to the end of the line -to Betty Cook

page 3

Appendix H Continued

5. When Pete discovered his hat was gone, what did he do?	-walked all the way back to the end of the line -to Betty Cook
6. When Pete goes to the movies now, what does he do?	-goes to the end of the line -waits his turn to buy his ticket

The Very Special Passenger (E3)

page 1

1. When Mr. Cook got on the bus, he said, "I see there is a seat for me today." and then laughed. Why did he laugh?	-he was the only passenger on the bus
2. What did the bus driver tell Mr. Cook that he was going to be doing soon?	-we will have another passenger soon -we will pick him up at West Street

page 2

3. What is so special about the very special passenger?	-he does not have to pay to ride the bus
4. Why doesn't the special passenger have to pay to ride the bus?	-because he saved a little girl who fell in the river -the little girl's father is a bus driver -he is the bus driver's friend

page 3

5. If the special passenger wants a ride, what does he do?	-stands at a bus stop like anyone else
6. The bus driver told Mr. Cook about what the special passenger does when he gets on the bus. Why did this surprise Mr. Cook?	-because Mr. Cook thought he would sit near the bus driver so he could talk with him

page 4

7. Who is the very special passenger?	-a big brown dog

The Stolen Bush (E3)

Questions to be asked after page 3:

page 1

1. Why did Mr. Gray stop his car and get out?	-to look at the beautiful bushes -he thought one would look just right in his garden at home

Appendix H Continued

2. Why did he look around to see if anyone was watching him?	-because he wanted to take the bush -he didn't want anyone to see him take the bush

page 2

3. What happened to surprise Mr. Gray as he was looking at the bush he had just dug up?	-someone talked to him -a park ranger rode up on his horse and talked to him -the park ranger caught him
4. Why was Mr. Gray afraid?	-he knew he had been stealing -the ranger was the policeman of the forest

page 3

5. What did the Ranger tell Mr. Gray about the National Park Forest?	-the National Park belongs to everyone -many people come from far away to see the beautiful bushes

Questions to be asked after page 6:

page 4

6. What did the Ranger make Mr. Gray do?	-dig a hole to plant the bush in -plant the bush again in a new place
7. Why was the job so hard and tiring for Mr. Gray?	-the ground was hard and dry

page 5

8. The Ranger told Mr. Gray to water the bush. How did Mr. Gray do this?	-with a small pail he had in the trunk of his car
9. Where did Mr. Gray get the water?	-from a stream, down the hill

page 6

10. Why did the Ranger smile after Mr. Gray drove away?	-he was sure that Mr. Gray would never steal another bush.

Growing Oranges (E3)

page 1

1. The story says that no two farms in the United States are alike. What are some ways that farms differ from one another?	-use of machinery -crops grown

page 2

2. What kind of farm is this story about?	-orange

Appendix H Continued

3. The story says that a field of orange trees is a busy place at many times of the year. What are some of the things an orange grower has to do to take care of his trees?	-drive tractors between the rows of trees -to turn over the dirt -to keep the grass from growing -prune the trees -so the oranges get more sunlight -fertilize the trees -so they produce lots of oranges
4. Why are branches cut off the trees	-so the oranges get more sunlight -so they will grow bigger
page 3	
5. What are some of the things farmers do to get rid of insects?	-insecticide -fumigate -ladybugs
6. What happens after a big tent is placed over an orange tree?	-the farmer releases a special gas which kills insects
page 4	
7. What does cold weather do to orange trees?	-frost kills new orange buds
8. What can farmers do to save the trees from the cold weather?	-light small stoves in the groves to to heat the air
page 5	
9. When do orange farmers need to hire more people to help them?	-when the oranges are ripe and must be picked

Ways of the Weather (E3)

1. In the year 1900 while hunting in northern Asia, a Russian stumbled over the body of a huge animal. Can you tell me where the body was located?	-he was frozen in the ice -only his head was sticking out
What did the hunter see when he looked at the animal?	-head -tusks
2. The animal was far too big for the hunter to move himself. So can you tell me what the man did to the animal?	-axed off his tusks
3. What did the man do with the tusks he cut off the animal?	-took them to a trading post -sold them

Appendix H Continued

4. At the trading post, the hunter told the manager about the beast, and the manager recognized it. What kind of animal was it?	-mammoth
What are some of the things the manager told the hunter about mammoths?	-a kind of elephant -died out about 10,000 years ago -discovery had to be reported to government according to law
(If no report) According to Russian law, what was the hunter supposed to do about the animal he found?	-report it to the government
5. The hunter notified the government that he had found a mammoth, and the government sent a group of scientists to the spot where the mammoth was located. What were some of the things that the scientists did to get the animal out of the ground?	-put up a wooden building around the body -lighted fires to thaw out the beast (melt the ice)
6. Once the scientists got the animal thawed out, what did they do with the body?	-cut it into parts -packed up the parts -refroze them in the cold air -put them on a sled -sent them to the railroad station
7. Where did the scientists send the animal?	-to the railroad station -to a museum
8. What was the weather like in this part of northern Asia when the mammoth was alive?	-warm and sunny
9. What does the story say about the weather in northern Asia today?	-land of everlasting ice and snow -coldest temperatures in the world there
10. In what position was the mammoth when the scientists melted the ice around him?	-sitting
11. Where were the mammoth's legs?	-back legs underneath him (sitting on his back legs) -one front leg raised
12. What happened to part of the mammoth's head?	-it was eaten -it was eaten by wolves

Appendix H Continued

13. The story says that the animal's body was perfectly preserved, that is, in perfect condition when the scientists dug him up. What does the story say about the animal's body that is so surprising?	-meat very fresh -could be eaten -buttercups on its tongue
14. Why did the mammoth's body stay fresh and not decay after he died?	-not enough time after he died before he was frozen -temperature dropped so fast and it got so cold that body was frozen solid in an instant
15. What had the animal been doing just before it died?	-feeding on grass and flowers
16. The story says that just before the mammoth died it had been feeding on grass and flowers in the warm sunshine. Then, something happened. What was it?	-temperature dropped in a matter of seconds (suddenly) -the animal was frozen -he didn't have a chance to swallow his meal
17. The story talks about an unsolved mystery. What is it that scientists cannot figure out about what happened?	-what force could have caused such a sudden and complete change in the weather -what caused the temperature to drop so suddenly

The manager there bought the tusks and then asked about the rest of the beast. From what the hunter told him, the man recognized it as a mammoth, a kind of elephant that had died out about 10,000 years ago. According to Russian law, all mammoth and other frozen animal discoveries were to be reported to the government. The hunter did this, and a group of scientists was sent to the spot.

Figure 1. Sample page from the intoned text of Ehri and Wilce (1974)

- 1 -

This story happened a long time ago.

It happened one summer to a girl named Nina.

That summer Nina and her mother were living on a farm.

Nina did not like the children who lived

down the road. But her mother said

that Nina had to play with them. Nina was very angry.

"I will not play with them!" she said to herself.

"I will run away. That's what I'll do!"

Nina put some bread and butter in a bag.

Then off she went down the road.

Figure 2. Sample page of the intoned text.

- 1 -

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Figure 3. Sample of the random text.

- 1 -

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Figure 4. Sample page of the standard text.